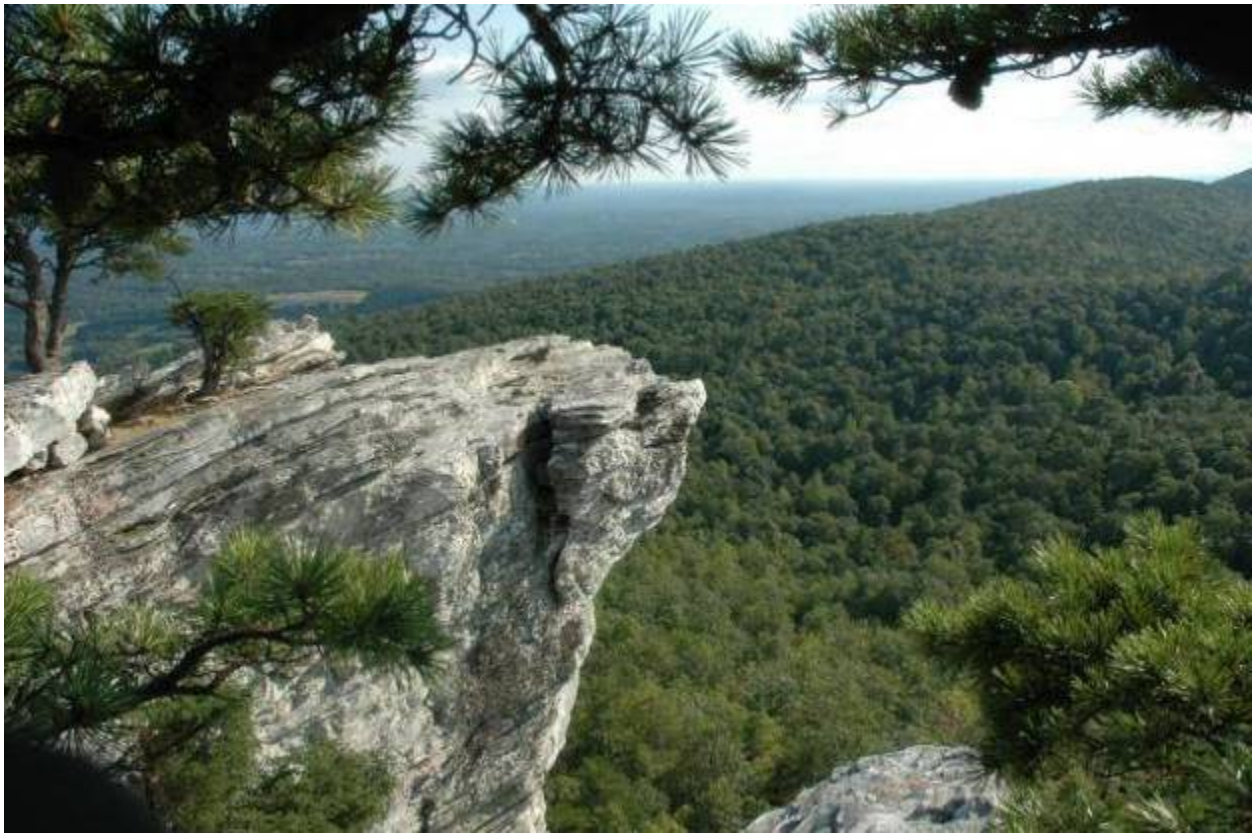
Hanging Rock State Park General Management Plan



North Carolina Department of Environment and Natural Resources

Division of Parks and Recreation

November 2012

CHAPTER 1

PARK PURPOSE AND HISTORY

MISSION STATEMENT FOR THE STATE PARKS SYSTEM

The North Carolina state parks system exists for the enjoyment, education, health, and inspiration of all our citizens and visitors. The mission of the state parks system is to conserve and protect representative examples of the natural beauty, ecological features, and recreational resources of statewide significance; to provide outdoor recreational opportunities in a safe and healthy environment; and to provide environmental education opportunities that promote stewardship of the state's natural heritage.

HANGING ROCK STATE PARK PURPOSE STATEMENT

Hanging Rock and the Sauratown Mountains are dominant landmarks in the northwest Piedmont. Local residents, inspired by the natural beauty of the mountain vistas and spectacular waterfalls, supported placing the area in public ownership. Hanging Rock State Park was established in 1936 when the Winston-Salem Foundation, a local philanthropic organization, sold the property to the state of North Carolina for $10. A reversion clause in the deed specifies that the property was conveyed "…upon the condition that a state or national park be constructed." A citizens' group and local politicians supported park development in cooperation with the Civilian Conservation Corps (CCC). The combination of significant natural resources, scenery, and attractive visitor facilities make Hanging Rock State Park one of North Carolina's premier parks.

Hanging Rock State Park's significant geological resources are a consequence of its location in the Sauratown Mountains, a ridge line separated from the Blue Ridge Mountains. The mountains were formed by a 200-foot-thick layer of erosion-resistant quartzite that became exposed as the surrounding land weathered away, leaving prominent monadnocks. The erosion, combined with a gradual uplifting of the rock, produced the Sauratown window (anticlinorium), which exposes rocks that would be otherwise hidden beneath the rocks of the surrounding Piedmont terrain. The exposed quartzite creates numerous large outcrops, cliffs and caves including Moore's Knob, Cook’s Wall, Wolf Rock, Hanging Rock and Tory’s Den. At some of the outcrops, the steep terrain and mountain streams combine to form outstanding waterfalls. Flexible sandstone (itacolumite) is found in the Sauratown Mountains. The park preserves some of the best examples of flexible sandstone, which is formed with interlocking quartz and mica flakes.

The park's significant biological resources include natural communities normally located in the Appalachian Mountains. These disjunct montane communities include Low-Elevation Rocky Summit, Montane Acidic Cliffs, Carolina Hemlock Bluffs, Pine-Oak Heath, Chestnut Oak Forest and fire-dependent species. The park is one of only a few known locations where Carolina hemlock and Canadian hemlock coexist. The park contains three significant natural heritage areas: Moore's Knob/Cook's Wall Natural Area, Hanging Rock Summit Natural Area, and Cascade Creek Natural Area. In addition, the park contains seven rare plant species, including witch-adler and Bradley's spleenwort, three special animal species, Wehrle's salamander and the

brown elfin butterfly, and the endangered peregrine falcon.

The striking contrast between the Sauratown Mountains, which rise over 2,500 feet, and the rolling Piedmont landscape creates the park's most significant scenic resource. Moore's Knob, the highest peak in the range, rises more than 1,700 feet above the surrounding terrain. The views available to park visitors from the mountain cliffs are the park's most notable scenic resource. Picturesque cascades and waterfalls, including Window Falls, Hidden Falls, Tory's Den Falls and the Upper and Lower Cascade Falls, are the most significant natural water features. Hanging Rock Lake is also a significant scenic area. The impoundment's clear water, wooded shoreline and view of Moore's Knob provide a unique mountain vista.

Significant recreational resources include both natural and developed resources that support many opportunities for natural-resource-oriented recreation. Interpretation and education are emphasized because of the park's natural significance and proximity to population centers. The park's extensive undeveloped areas provide excellent opportunities to experience natural settings predominated by the forces of nature. Extensive mountain terrain is available for hiking. Scenic cliffs and waterfalls serve as hiking trail destinations, while all trails provide opportunities to view wildlife. Cook's Wall and Moore's Wall are sheer rock surfaces suitable for rock climbing. Visitors may also paddle on the Dan River, fish, and swim and boat at the park lake. The combination of natural and scenic beauty and recreational resources make the park a popular picnicking and camping destination.

A bowl-like area, rimmed by Moore's Wall, Cook's Wall, and Hanging Rock Ridge, contains slopes suitable for visitor facilities. The CCC established the first access road to this area and developed a lake, a large stone bathhouse, and picnic shelters. These CCC facilities create the park's distinctive architectural character. The CCC structures have become significant historic resources because of their architecture and their connection to the Great Depression era federal public works programs. The bathhouse and lake area were placed on the National Register of Historic Places in 1991. Significant prehistoric archaeological resources have not yet been discovered due to limited investigation. The Sauras, a Native American tribe, had a village on the Dan River in Stokes County until the end of the 17th century. The tribe used the river as a transportation corridor, and artifacts probably remain in the park.

Hanging Rock was authorized as a state park so that its valuable geological, biological, scenic, recreational, and archaeological values could be protected. The Division of Parks and Recreation is charged with preserving these values and providing park experiences that promote pride in and understanding of North Carolina's natural heritage.

NATURAL HISTORY OF HANGING ROCK STATE PARK

Hanging Rock State Park lies in Stokes County, in a topographically complex area of isolated, low mountains at the eastern end of the Sauratown Mountains. This range rises sharply above the surrounding Piedmont landscape, and other prominent, nearby peaks in the range include Sauratown and Pilot mountains. The Sauratowns are physically separated from the Blue Ridge Mountains by almost 20 miles, and their unusual geology and topography produce a range of conditions that support an unusual assemblage of montane and Piedmont species. The park

protects an impressive array of high quality natural communities and rare species, and the North Carolina Natural Heritage Program (NHP) has documented nine natural community types that occur across a range of elevations and aspects. The Division has designated 4,667 acres as a Dedicated Nature Preserve, and to date, over 1,400 plant and animal species have been documented, including more than 110 rare species.

The park is surrounded by a series of steep, erosion-resistant quartzite-capped ridges, with extensive vertical and overhanging outcrops that are several hundred feet tall. One of the park's notable geological features is the presence at Cook's Wall of itacolumite, a very rare and flexible sandstone. The center of the park is a narrow valley, where Indian Creek and Cascade Creek flow with a gentle grade before plunging over a series of waterfalls. The northern part of the park contains lower ridges and ravines, dissected bluffs, and the narrow floodplain of the Dan River.

The park's high point is Moore's Knob which reaches 2,579 feet and sits atop a long and prominent series of north and west-facing quartzite cliffs. Cook's Wall is a south-facing quartzite cliff reaching an elevation of 2,300 feet. The park's namesake peak reaches 2,100 feet and is a prominent overhanging quartzite cliff. Numerous ridgeline outcrops extend beyond Hanging Rock proper. The southeastern part of the park includes Flat Shoals Monadnock, which is slightly lower and lacks prominent outcrops, but is still rugged.

The park is considered to be nationally significant biologically for its array of rare species and natural communities. Low Elevation Rocky Summit communities, which are rare throughout the state and particularly so in the Piedmont, occur on the high cliffs and crags of Moore's Knob, Cook's Wall, Hanging Rock, Devil's Chimney, House Rock, and Huckleberry Ridge. The rocky summits of these areas are characterized by abundant bare rock and scattered trees. Bear oak (*Quercus ilicifiloia*), and Greenland sandwort (*Minuartia groenlandica*), both of which are state-listed rare species and disjunct from their primary ranges, are known from the park's ridges.

More sheltered rock outcrops occur along the gorges of Cascade Creek and Indian Creek, and these areas include Montane Acidic Cliff communities. The largest waterfalls that occur along these creeks support Spray Cliff communities, which are extremely uncommon in the Piedmont. Areas with deeper soil contain Carolina Hemlock Bluff communities, the easternmost occurrences in the state for this rare community type.

Most of the park is covered with Chestnut Oak Forest which is mature, but which also shows the effects of logging, intense fires, and the loss of the American chestnut (*Castanea dentata*) from blight in the early 20th Century. The Chestnut Oak Forest is notable here as the state's easternmost occurrence. It occurs in large areas from Moore's Wall to Huckleberry Ridge, and around Hanging Rock Ridge, Wolf Rock, and Cook's Wall.

Patches of the less common and disjunct Pine-Oak/Heath community type occur on the driest south-facing ridges at Hanging Rock, Cook's Wall, and Moore's Wall. Small areas of Dry Oak–Hickory Forest and other upland communities occur in less extreme sites. The bluffs of the Dan River are primarily Chestnut Oak Forest, but a small area of Rich Cove Forest is present. Much of the floodplain of the Dan River was farmed in the recent past and has successional vegetation,

but a small area of Piedmont Alluvial Forest is present. Most of the forest communities show a character intermediate between the mountain types and Piedmont equivalents, resulting in unique occurrences and unusual juxtapositions of types.

A small wetland area is present on a bench on the north side of Moore's Wall. The lower part of the wetland was impounded as a small pond, which was drained in 1998. The upstream portion contains a mucky, seepage-fed wetland community that is tentatively classified as a Hillside Seepage Bog. It contains a very unusual combination of plants, even for that rare community type, including species typical of the Coastal Plain and of mountain bogs.

The aquatic communities of Cascade Creek and Indian Creek are also of note, as they are disjunct streams that occur at higher elevations than is otherwise the case this far east in the Piedmont. A population of the rare caddis fly *Diplectrona metaqui* in these two creeks is the only population known in the state. Both of these streams have been designated by the N.C. Division of Water Quality as Outstanding Resource Waters, which is the state's highest designation.

As noted above, over 110 rare plants and animals are present in the park. Greenland sandwort (*Minuartia groenlandica*) and Bradley's spleenwort (*Asplenium bradleyi*) occur on the bare rock of the Low Elevation Rocky Summits and Montane Acidic Cliffs. Peregrine falcons (*Falco peregrinus*) nest on the north end of Moore's Wall, and their occurrence here is the farthest east in North Carolina. Bear oak occurs on the park's highest and driest ridges, and the park is one of only five sites in the state where it is known to occur. Timber rattlesnakes (*Crotalus horridus*) use rocky areas for dens and forage in the forests. Wehrle's salamander (*Plethodon wehrlei*) is present in moist forested areas in several places. Large witch-alder (*Fothergilla major*), sweet pinesap (*Monotropsis odorata*), shinyleaf meadowsweet (*Spiraea betulifolia*), and numerous other rare plants occur across the park.

The aquatic communities of Cascade Creek and Indian Creek are also of note as disjunct streams at higher elevations than otherwise occur this far east in the Piedmont. A population of the caddis fly *Diplectrona metaqui* in these two creeks is the only population known in the state. Both of these streams have been designated by the Division of Water Quality as Outstanding Resource Waters, which is the state's highest designation.

Although the park's natural resources are considered to be nationally significant, there are numerous non-native species that pose varying threats. The hemlock woolly adelgid (*Adelges tsugae)* occurs throughout the park's Canada and Carolina hemlocks, and represents a particularly severe threat to the disjunct Carolina hemlocks and the communities within which they occur. The Gypsy Moth (*Lymantria dispar*) poses a major threat to the park's deciduous forests. Several invasive exotic plants are also present, including kudzu (*Pueraria lobata*), privet (*Ligustrum* spp.), tree of heaven (*Ailanthus altissima*), and Japanese stilt grass (*Microstegium vimineum*), which is a major concern in floodplains along the Dan River in otherwise intact forests. Japanese honeysuckle (*Lonicera japonica*) is also abundant and is degrading floodplain and bluff communities.

Because of the Sauratown Mountains' location in the Piedmont and its isolation from the higher

elevation Blue Ridge, the park is a curious amalgamation of lowland and montane species and natural community types. The primary sources for information on the park's natural communities include inventories conducted by N.C. Natural Heritage Program biologists and DPR staff; the *Inventory of Natural Heritage of Stokes County, North Carolina,* which was completed by N.C. NHP contract biologists in 1998; and DPR's Natural Resources Inventory Database (NRID). The information included in the GMP addresses only the most prominent and well-documented examples of the park's natural community types and is not a comprehensive accounting. Additional examples of these and other community types are likely present and will be added to the park's database as they are identified and documented. The general descriptions for the park's natural communities are taken from *Classification of the Natural Communities of North Carolina, 3rd Approximation (1990),* by Mike Schafale and Alan Weakley.

CULTURAL HISTORY OF HANGING ROCK STATE PARK

According to research by the N.C. Division of Archives and History, Stokes County and the Hanging Rock area were inhabited by the Saura Indian tribe prior to European settlement. Discovered Native American artifacts reveal that other Indians roamed the fields and forests in Stokes County possibly thousands of years before the Saura tribe, but the Saura tribe inhabited the region when Europeans first entered the area. Col. William Byrd surveyed the boundary line between North Carolina and Virginia in 1728. In his journal, he reports finding upper and lower Saura villages on the Dan River, but they were deserted.

Because the Saura left no written history, all that is known of the Saura comes from a few records of wilderness explorers, supplemented by what archaeologists have been able to determine from investigations of their village sites. Information about the Saura Indians and replicas of some artifacts that have been discovered are displayed at the park visitor center.

The Dan River enters the northwest corner of Stokes County and flows diagonally across the county, its course passing through Hanging Rock State Park. The river may have been named for an early Saura chief, or it might have been named by William Byrd, who, so impressed by the beauty of the area, reflected on a biblical reference and felt he had traveled "from Dan to Beersheba." The name is "*probably an Indian name*" (Powell, 1968).

The Sauratown Mountains, named for the Saura Indians, are the remnants of a once-mighty range of peaks. Over millions of years, wind, water and other forces wore down the lofty peaks. What remains of these ancient mountains is erosion-resistant quartzite which now supports scenic ridges and knobs. The Sauratown Mountains, one of the most easterly mountain ranges in the state, are often called "*the mountains away from the mountains*" because they are separated from the nearby Blue Ridge Mountains.

The first European settlers in the area were German and Scots-Irish who came from more northern states. The land comprising the current day park was settled more slowly than surrounding areas because of the mountainous terrain. Settlements had been established at the base of the mountain by the time of the Revolutionary War. Farming became the area's primary occupation, although an iron industry developed from several forges operating in the area as early as the 1790s.

Following the Civil War, Stokes County became a popular resort area for tourists attracted by the area's mineral springs and the beauty of the Sauratown Mountains. Three large resort hotels located close to one another operated near springs within a few miles of Danbury. Testimonials by both customers and physicians touted the many beneficial qualities of the mineral waters. Moore's Springs, Piedmont Springs and Vade Mecum Springs hotels were elegant and lavish for their time. The hotels presented orchestras and string ensembles from Europe; recreational activities such as swimming in the Dan River, horseback riding, picnicking, billiards and cards; their food was excellent and plentiful. These large, white frame hotels were successful through the turn of the 20th century, but by 1929, they had all closed.

A decade of land speculation occurred prior to the establishment of Hanging Rock State Park. Developers were intent on creating a resort on the mountain, but their plans never materialized and the efforts ended in bankruptcy. The land that would become the core of the park was transferred four times from 1925 through 1935. Finally, Hanging Rock State Park was established April 10, 1936 when public-spirited citizens and the Winston-Salem Foundation, a local philanthropic organization, essentially donated 3,096 acres of land to the state of North Carolina for ten dollars. The deed contains a reversion clause specifying that the property is conveyed "*…upon the condition that a state or national park be constructed*." The Winston-Salem Foundation was founded by Col. Henry Fries, president of Wachovia Bank.

Land donated for the park had been previously considered by the U.S. Forest Service (USFS) for a national forest. High prices, particularly for farm land, forced the USFS to abandon its plans. Surveys, records and aerial photographs of land in and adjacent to the park were turned over to the N.C. Department of Conservation and Development by the USFS, and these proved helpful in surveying the park and in other work undertaken with land acquisition and initial park development. (*Sixth Biennial Report*, 1936)

A citizens' group, the Stokes County Committee for Hanging Rock State Park, and local politicians supported the state park's development in cooperation with the Civilian Conservation Corps (CCC). The CCC, created by a 1933 bill passed by Congress, gave 250,000 young men subsistence and small wages for work in the national forests and other government-owned properties during the Great Depression.

Many still-existing facilities in the park were constructed by the CCC between July 1935 and 1942, when a CCC camp operated adjacent to the park. The CCC also operated camps at Singletary Lake, Mount Mitchell, Morrow Mountain, and Cape Hatteras (now Cape Hatteras National Seashore) state parks and at Crabtree Creek Recreation Demonstration Project (now a part of William B. Umstead State Park). The Great Depression-era CCC facilities were important to early development of North Carolina's state parks system. A statewide recreation study undertaken at this time in cooperation with the North Carolina State Planning Board and the National Park Service would serve to provide long-range planning for state park system development.

The first one mile of access road in Hanging Rock State Park was completed by the CCC in 1936, and other visitor facilities followed shortly thereafter. A concrete and earthen dam

completed in 1938 impounded a 12-acre lake. The concrete dam was a massive undertaking for the CCC workers: 27 feet wide at the base, 40 feet high, 194 feet long, with a 40-foot wide spillway. It was completed by the CCC workers without employing outside help. The earth dam, 40 feet wide on top, 360 feet long and 18 feet high, used over 13,000 cubic yards of earth.

Shortly thereafter, a bathhouse, diving tower and sandy beach also were completed and the lake filled. The 152-foot long stone bathhouse provided changing facilities for up to 1,000 people. The stone for the bathhouse was quarried by CCC workers. These workers also cut timber used in park facility construction. Other facilities constructed by the CCC include the main park road and parking area, utilities, a picnic area and shelter, and hiking trails. Although land acquisition efforts by the state and public spirited citizens continued, particularly on tracts needed for proper development, access and scenic protection of the park, no additional land had been acquired through June 1938. (*Seventh Biennial Report*, 1938) A lack of land acquisition funding, the prohibition on eminent domain for park purposes in Stokes County, and other problems in securing land necessary to complete the park roads continued to delay completion of road construction, which in turn delayed opening of the recreational facilities for public use (*Eighth Biennial Report*, 1940).

With the advent of World War II in 1941, the state parks system lost staff to the war effort, and construction and development of parks across the state largely ceased. The CCC, which had done so much to improve and develop parks across the state, disbanded as peace-time manpower, activities and materials were diverted to war efforts. Gasoline and tire rationing reduced the ability of people to travel to the parks, and statewide visitation for 1942 was reduced to approximately one-third of what it had been the previous year. Reduced attendance resulted in reduced revenues; while all the parks continued operating, services focused on recreation uses – such as picnicking, camping, hiking, and nature study – that did not require additional operating personnel and materials expenditures.

In spite of the war, some progress at Hanging Rock State Park took place. CCC work continued until March 1942, when the camp was transferred to a military area. A 350-space parking area and a bridge to the proposed cabin area were completed. Amenities were added to the picnic area, guard rails were installed along the roadsides, drainage and erosion control improvements were made, and work was begun on the lodge and administration building. Following departure of the CCC, an "*epidemic of forest fires*" occurred around the park and one within the park. Prompt action by the park ranger and firefighters prevented serious damage to the park.

Little land acquisition had taken place since the initial donation. Nineteen acres were added in 1938. In July 1942, 168 acres (purchased at $4 an acre) were also added (*Ninth Biennial Report*, 1942), bringing the park's total acreage to 3,283. Land acquisition remained the park's most pressing need, but it would be many years before any additional land would be acquired. Land needed for road completion still had not been secured, so access was still unsatisfactory, making it "… *impossible to open fully the park for public use during the summers of 1940 and 1941*." Even with poor access, public use of the park for picnicking, hiking, camping and nature study increased. (*Ninth Biennial Report*, 1942). In 1943, the complete park was surveyed.

During the war, students from the Army Signal Corps School of Winston Salem used the park for several months for field training purposes. Medical units from Camp Butner also field trained in the park. (*Tenth Biennial Report*, 1944). The park formally opened July 21, 1944, although, as noted previously, the public had been using the area prior to this date. Visitation during the summer of 1944 was excellent despite a polio epidemic and war-time restrictions, and attendance was also good the next year, particularly after the ending of gasoline rationing. In the fall of 1945, the completed portion of the park road was paved, but access to the park continued to be via a "…*dangerous narrow road through private property*." With the end of the war, Tom Morse returned from his naval service and resumed leading state parks in October 1945.

Even with poor park access, visitation in June 1946 hit an all-time monthly high of 13,180. Park administration considered all the facilities, with the exception of the bathhouse, too small for the amount of public use and recommended that additional facilities be constructed.

The General Assembly repealed the prohibition on the use of eminent domain for land acquisition in Stokes County, removing the exception that had in part prevented acquiring land needed for park access and other purposes. Funds for land acquisition, however, were still not available, (*Eleventh Biennial Report*, 1946) and so no land acquisition would take place for many more years.

In 1945, the State Highway Commission began the relocation of and paving of the country road serving Hanging Rock State Park, greatly improving the often dusty or muddy road. Fourteen rowboats were provided for use on the park lake in June 1948. Also in 1948, Hanging Rock Road was relocated to its present alignment, improving access and establishing the park entrance. Visitation to the popular park continued to increase.

The 1947 General Assembly appropriated $500,000 for statewide park improvements, a tremendous amount considering the previous monies available. From 1934-1942, for example, only $39,428 was available for such purposes. Up until this time, federal agencies such as the CCC, Civil Works Administration, Farm Security Administration, Soil Conservation Service and the Works Progress Administration had been responsible for almost all of North Carolina's state park construction. Hanging Rock State Park received a much-needed allocation of $97,000 from these funds. (*Twelfth Biennial Report*, 1942) With an even larger General Assembly appropriation of $1,074,144 in 1949, the parks system continued addressing the backlog of needs at Hanging Rock and other state park areas.

By 1950, Hanging Rock's visitation exceeded 100,000, trailing only Morrow Mountain and Mount Mitchell state parks. In recognition of the growing importance of its 13 areas, in October 1948, state parks – which previously had been a branch of the Division of Forestry – became the Division of State Parks, still within the Department of Conservation and Development. (*Two Years of Progress*, 1950)

During the 1952-1954 biennium, six vacation cabins were opened for rent at Hanging Rock, tent and trailer campgrounds were completed, a boathouse built, and the bathhouse facilities were enlarged. Appropriations from 1947 and 1949 also paid for a sewage disposal system, a

maintenance/service center, and electrical and telephone lines. (*Building a Greater North Carolina*, 1954) The Window Falls Trail was installed in 1954.

In 1938, a lookout tower was constructed on Moore's Knob, which rises over 1,700 feet above the surrounding countryside. The original fire tower was steel with a seven-foot square metal cab. In 1951, a two-story stone structure replaced the original tower. This structure was heavily damaged by Hurricane Hazel in 1954. Moore's Knob Lookout, restored as a viewpoint without a cab, is currently maintained as a hiking destination within the park. From the tower, hikers may enjoy views of downtown Winston-Salem, Pilot Mountain, and the Blue Ridge Mountains. Moore's Knob Lookout has been listed on the National Historic Lookout Register, maintained by the American Resources Group, since 2008.

In the 1960s, a new hiking trail was opened. Although an ongoing threat, forest fires continued to be negated by quick responses. A severe Southern Pine Beatle outbreak was also contained. New underground electric cable was installed to serve the cabins, camping area and bathhouse. Additions to the maintenance/service area were completed and a ranger residence constructed. (*21st Biennial Report*, 1966)

The bathhouse and park lake constructed by the CCC were listed on the National Register of Historic Places in 1991. The bathhouse is the largest and most distinctive facility constructed in North Carolina by the CCC. The building is significant for its rustic architecture. Included in the National Register listing are the adjacent 12-acre Hanging Rock Lake and its concrete stone dam, which were built concurrently with the bathhouse. The bathhouse and its setting embody the ideals of park design that emphasized harmony with the natural landscape through sensitive siting and the use of native building materials and rustic architectural forms. The lake and 12 acres of predominantly wooded shoreline embellish the historic setting and are integral to the historic character and function of the bathhouse. (National Park Service)

General Assembly appropriations for state park land acquisition had been meager over the years since authorization of the first state park, Mount Mitchell, in 1915. Development funding had also been sparse. In 1964, the U.S. Congress established the Land and Water Conservation Fund (LWCF). The LWCF, a federal matching grant program, would become a primary funding source for land acquisition and/or development projects in state parks for many years.

One of the state's first LWCF projects, a federal grant of $25,056 for Hanging Rock State Park, was approved by the federal Bureau of Outdoor Recreation in 1966. The matching grant, the first of four at the park, assisted in the construction of the lower loop 35 campsites, a washhouse, and over one mile of camping road and underground electric service. (LWCF 37-0004)

Finally, 27 years after the last land acquisition at Hanging Rock State Park, additional land was bought for the park. In December 1968, 189.6 acres were purchased from the Moore Estate, followed by 253 acres from the Taylor Estate in March 1969. In December 1969, the Taylor Estate sold another 1,183 acres to the state. Purchases in the 1970s added the Lower Cascades, a spectacular 40-foot waterfall, and Tory's Den, a rock outcropping rumored to have served as a Revolutionary War hideout for British Loyalists.

A $473,947 LWCF matching grant approved in 1977 assisted with the acquisition of ten parcels totaling 1,075 acres and costing almost $948,000. The grant illustrates the creative way the state parks system stretched its financial resources. To match the LWCF funds, $250,059 from two Appalachian Regional Commission grants and the value of a generous partial donation by the Taylor family were used to decrease the amount of state appropriations needed. Included in the grant was a 194-acre parcel at the park entrance crucial to park access, thought to be owned by the state due to a surveying error, and approximately 430 acres that created a corridor connecting Hanging Rock State Park and the Dan River. (LWCF 37-00487) The Northwest Environmental Preservation Committee, Inc. worked with the Department of Natural and Economic Resources and Division of Parks and Recreation for over two years to facilitate acquisition of these two key parcels (Shelton, 1977), continuing the long tradition of public advocacy for the park.

The Sauratown Trail, a popular regional equestrian trail that connects the Sauratown Mountains and has a segment running through the park, opened in 1979. The Ruben Mountain Trail, later renamed the Sauratown Loop Trail, and Tory's Den Trail were also completed that year.

The fourth and final LWCF grant at Hanging Rock State Park helped pay for $415,851 in renovations to the bathhouse, drainage improvements and utility work. The work took place in the late 1980s. (LWCF 37-00886).

Funds from the $35 million state parks bond referendum approved by voters in 1993 paid for construction of the Hanging Rock State Park visitor center, completed in 1996. The fully accessible stone and wood structure offers an auditorium, exhibit room and a classroom for interpretation and education programs. It also houses the park office and serves as a contact station for the hundreds of thousands of people who visit the park each year. The bond funds also provided funding for acquisition of several very small tracts and two larger ones totaling approximately 210 acres. Another large land purchase took place in 2000 when Flat Shoals Mountain, a smaller summit visible from the top of Hanging Rock, was added to the park.

The North Carolina General Assembly established the Parks and Recreation Trust Fund (PARTF) in 1994 to fund improvements in the state's park system, to fund grants for local governments and to increase the public's access to the state's beaches. The Parks and Recreation Authority, a 15-member appointed board, was also created to allocate funds from PARTF to the state parks and to the grants program for local governments.

PARTF quickly became the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks. In 2002, PARTF funded its first acquisition at Hanging Rock Other land purchases have followed since. In 2005, also using funding provided by PARTF, four additional rental cabins were constructed adjacent to the six built in 1952.

From its beginnings in 1936, spurred by the love of this special place and action to protect and preserve it made by local citizens, Hanging Rock State Park has become one of North Carolina's premier parks. It now contains over 7,000 acres, protects outstanding examples of North Carolina's natural heritage, offers a wide variety of recreational and environmental education

opportunities, and is visited and enjoyed by many hundreds of thousands of North Carolinians and visitors to the state annually.

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CHAPTER 2

PARK DATA

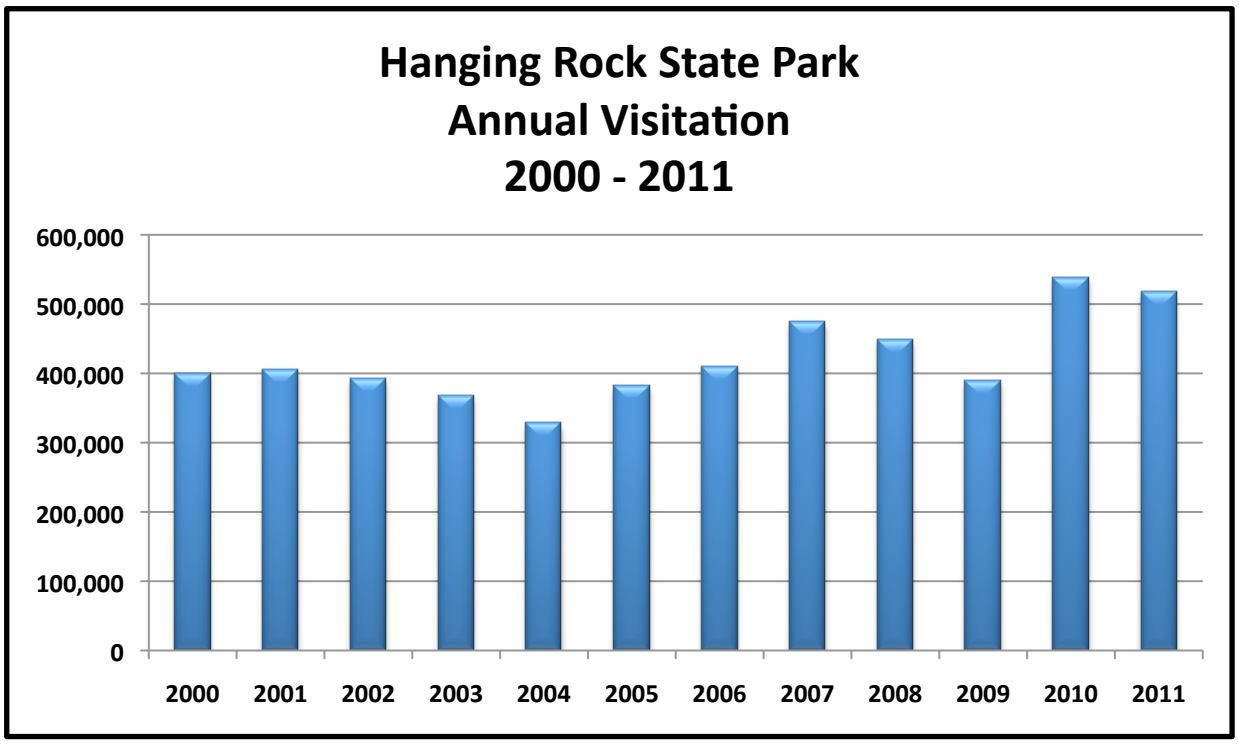
Hanging Rock State Park
2011 Boundaries
7,049 Acres

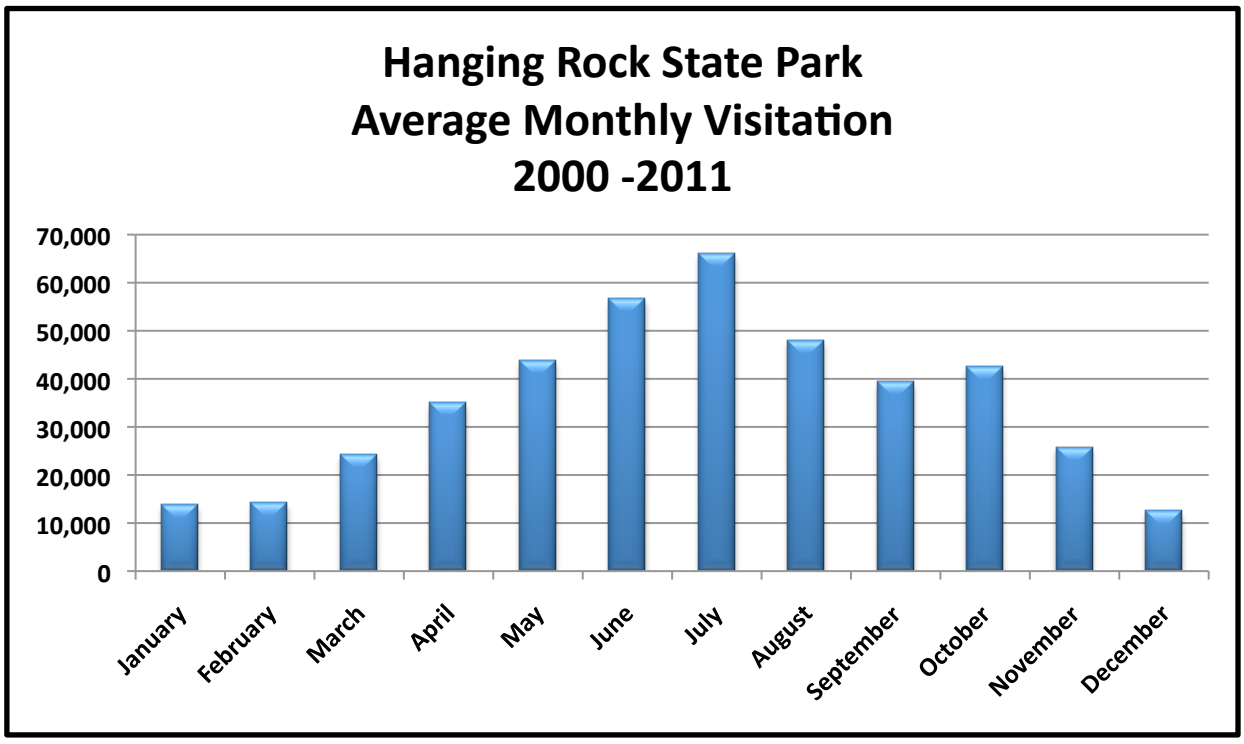
State Parks Unit

N

0 0.5 1 2 Miles

VISITATION
HANGING ROCK STATE PARK
2012



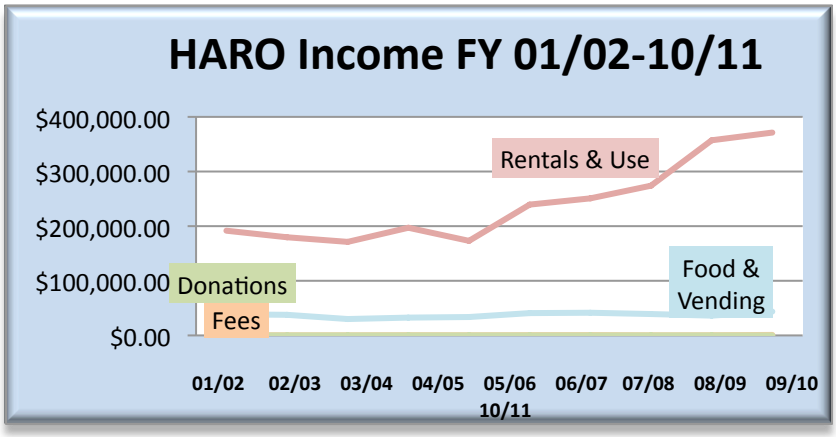


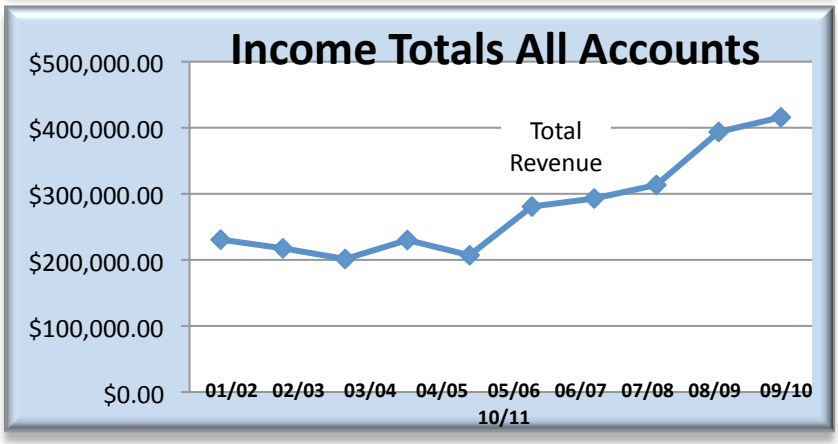
STAFFING
HANGING ROCK STATE PARK
2012

Permanent Staff	
Park Superintendent	1
Park Ranger	5
Maintenance Mechanic IV	1
Maintenance Mechanic III	1
Maintenance Mechanic II	2
Office Assistant III	1

HARO INCOME STATEMENT

FY	Fees	Rentals and Use	Food Vending	Donations	Operating Contracts	Pier Permits	Totals
01/02	$400.00	$191,660.42	$38,632.06	$0.00	N/A	N/A	$230,692.48
02/03	$200.00	$179,646.49	$37,703.65	$0.00	N/A	N/A	$217,550.14
03/04	$170.00	$171,225.98	$29,991.15	$0.00	N/A	N/A	$201,387.13
04/05	$405.00	$197,084.82	$32,598.68	$0.00	N/A	N/A	$230,088.50
05/06	$250.00	$173,083.44	$33,672.70	$0.00	N/A	N/A	$207,006.14
06/07	$460.00	$239,460.60	$40,837.25	$0.00	N/A	N/A	$280,757.85
07/08	$580.00	$250,860.50	$41,489.61	$0.00	N/A	N/A	$292,930.11
08/09	$185.00	$274,065.46	$39,143.13	$0.00	N/A	N/A	$313,393.59
09/10	$277.50	$357,167.02	$36,224.69	$0.00	N/A	N/A	$393,669.21
10/11	$910.00	$371,277.52	$43,681.97	$0.00	N/A	N/A	$415,869.49





Budget Database Information

FACILITY INVENTORY
HANGING ROCK STATE PARK
2012

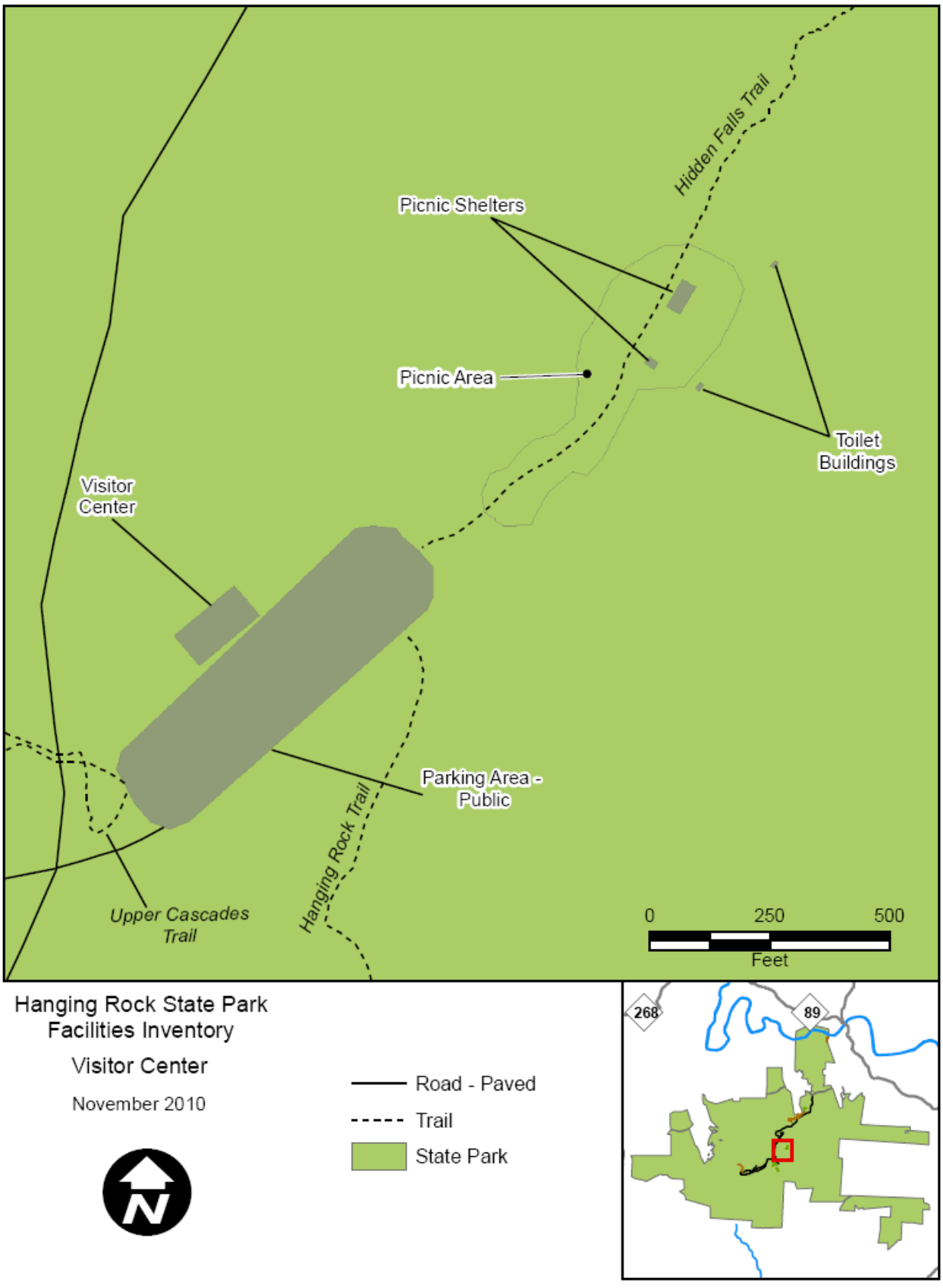
GIS ID	Facility Name	Facility Type
HARO0014	Septic Field 1	Septic Field
HARO0015	Septic Field 2	Septic Field
HARO0016	Septic Field 3	Septic Field
HARO0017	Group Camp Parking	Parking Area - Public
HARO0018	Park Residence 1	Park Residence
HARO0019	Park Residence 2	Park Residence
HARO0020	Park Residence 3	Park Residence
HARO0021	Barracks	Cabin - Group
HARO0023	Residence Area Dump Station	Dump Station
HARO0024	Warehouse & Lift Bay	Maintenance Shop
HARO0025	Vehicle & Equipment Garage	Maintenance Shop
HARO0026	Maintenance Shop	Maintenance Shop
HARO0027	Residence Storage Building 1	Storage Building
HARO0028	Residence Fuel Storage Building	Fuel Storage Building
HARO0029	Residence 1	Park Residence
HARO0030	Residence Storage Building 2	Storage Building
HARO0031	Park Office	Park Office
HARO0032	Residence Well House	Well House
HARO0033	Site 1	Campsite - No Hookups
HARO0034	Site 2	Campsite - No Hookups
HARO0035	Site 3	Campsite - No Hookups
HARO0036	Site 4	Campsite - No Hookups
HARO0037	Site 5	Campsite - No Hookups
HARO0038	Site 6	Campsite - No Hookups
HARO0039	Site 7	Campsite - No Hookups
HARO0040	Site 8	Campsite - No Hookups
HARO0041	Site 9	Campsite - No Hookups
HARO0042	Site 10	Campsite - No Hookups
HARO0043	Site 11	Campsite - No Hookups
HARO0044	Site 12	Campsite - No Hookups
HARO0045	Site 13	Campsite - No Hookups
HARO0046	Site 14	Campsite - No Hookups
HARO0047	Site 15	Campsite - No Hookups
HARO0048	Site 16	Campsite - No Hookups
HARO0049	Site 17	Campsite - No Hookups
HARO0050	Site 18	Campsite - No Hookups
HARO0051	Site 19	Campsite - No Hookups

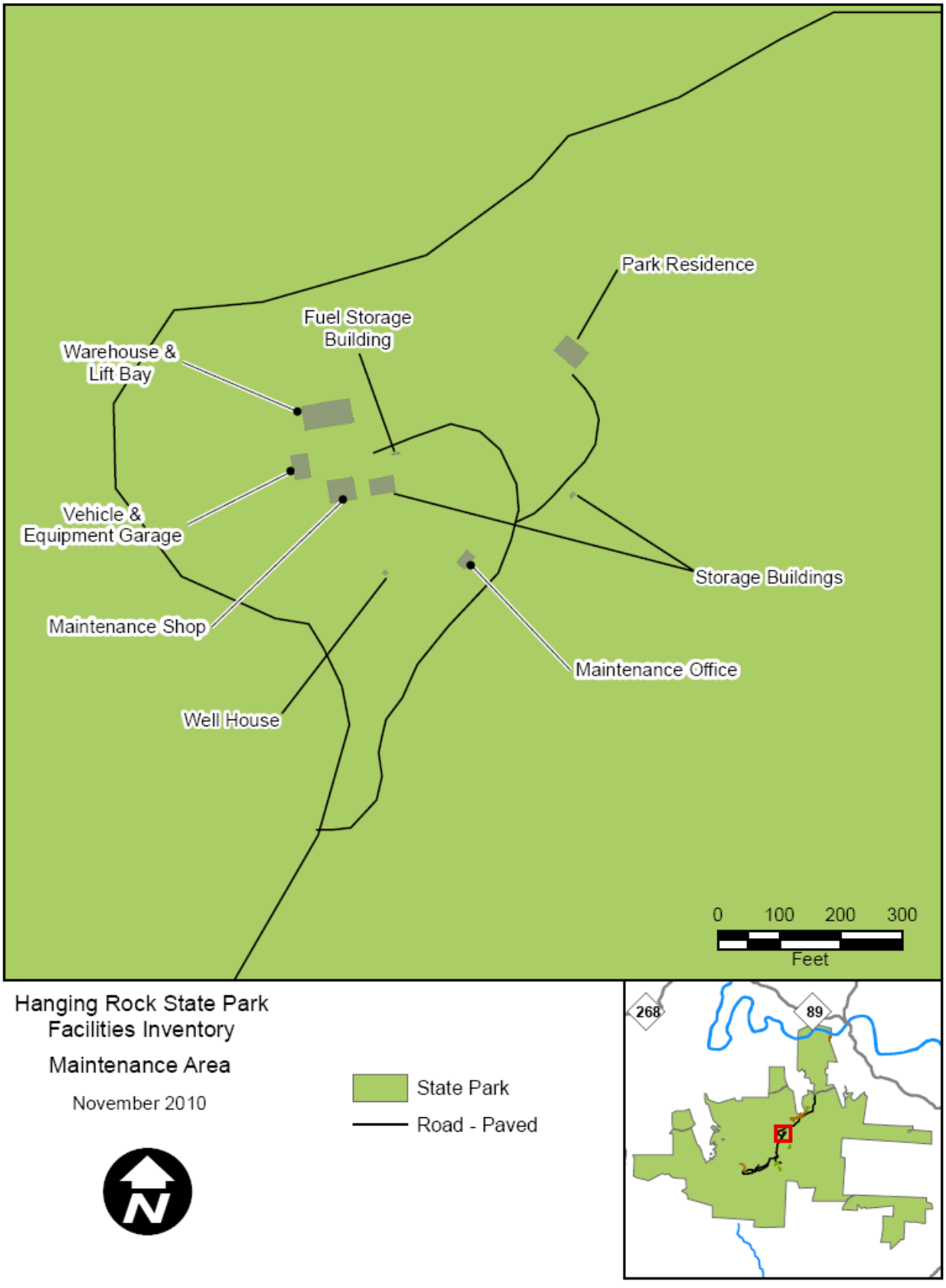
HARO0052	Site 20	Campsite - No Hookups
HARO0053	Site 21	Campsite - No Hookups
HARO0054	Site 23	Campsite - No Hookups
HARO0055	Site 22	Campsite - No Hookups
HARO0056	Site 24	Campsite - No Hookups
HARO0057	Site 25	Campsite - No Hookups
HARO0058	Site 26	Campsite - No Hookups
HARO0059	Site 27	Campsite - No Hookups
HARO0060	Site 28	Campsite - No Hookups
HARO0061	Site 29	Campsite - No Hookups
HARO0062	Site 30	Campsite - No Hookups
HARO0063	Site 31	Campsite - No Hookups
HARO0064	Site 32	Campsite - No Hookups
HARO0065	Site 33	Campsite - No Hookups
HARO0066	Site 34	Campsite - No Hookups
HARO0067	Site 35	Campsite - No Hookups
HARO0068	Site 36	Campsite - No Hookups
HARO0069	Site 37	Campsite - No Hookups
HARO0070	Site 38	Campsite - No Hookups
HARO0071	Site 39	Campsite - No Hookups
HARO0072	Site 40	Campsite - No Hookups
HARO0073	Site 41	Campsite - No Hookups
HARO0074	Site 42	Campsite - No Hookups
HARO0075	Site 43	Campsite - No Hookups
HARO0076	Site 44	Campsite - No Hookups
HARO0077	Site 46	Campsite - No Hookups
HARO0078	Site 45	Campsite - No Hookups
HARO0079	Site 47	Campsite - No Hookups
HARO0080	Site 48	Campsite - No Hookups
HARO0081	Site 49	Campsite - No Hookups
HARO0082	Site 50	Campsite - No Hookups
HARO0083	Site 51	Campsite - No Hookups
HARO0084	Site 52	Campsite - No Hookups
HARO0085	Site 53	Campsite - No Hookups
HARO0086	Site 54	Campsite - No Hookups
HARO0087	Site 55	Campsite - No Hookups
HARO0088	Site 56	Campsite - No Hookups
HARO0089	Site 57	Campsite - No Hookups
HARO0090	Site 59	Campsite - No Hookups
HARO0091	Site 58	Campsite - No Hookups
HARO0092	Site 60	Campsite - No Hookups
HARO0093	Site 61	Campsite - No Hookups
HARO0094	Site 62	Campsite - No Hookups

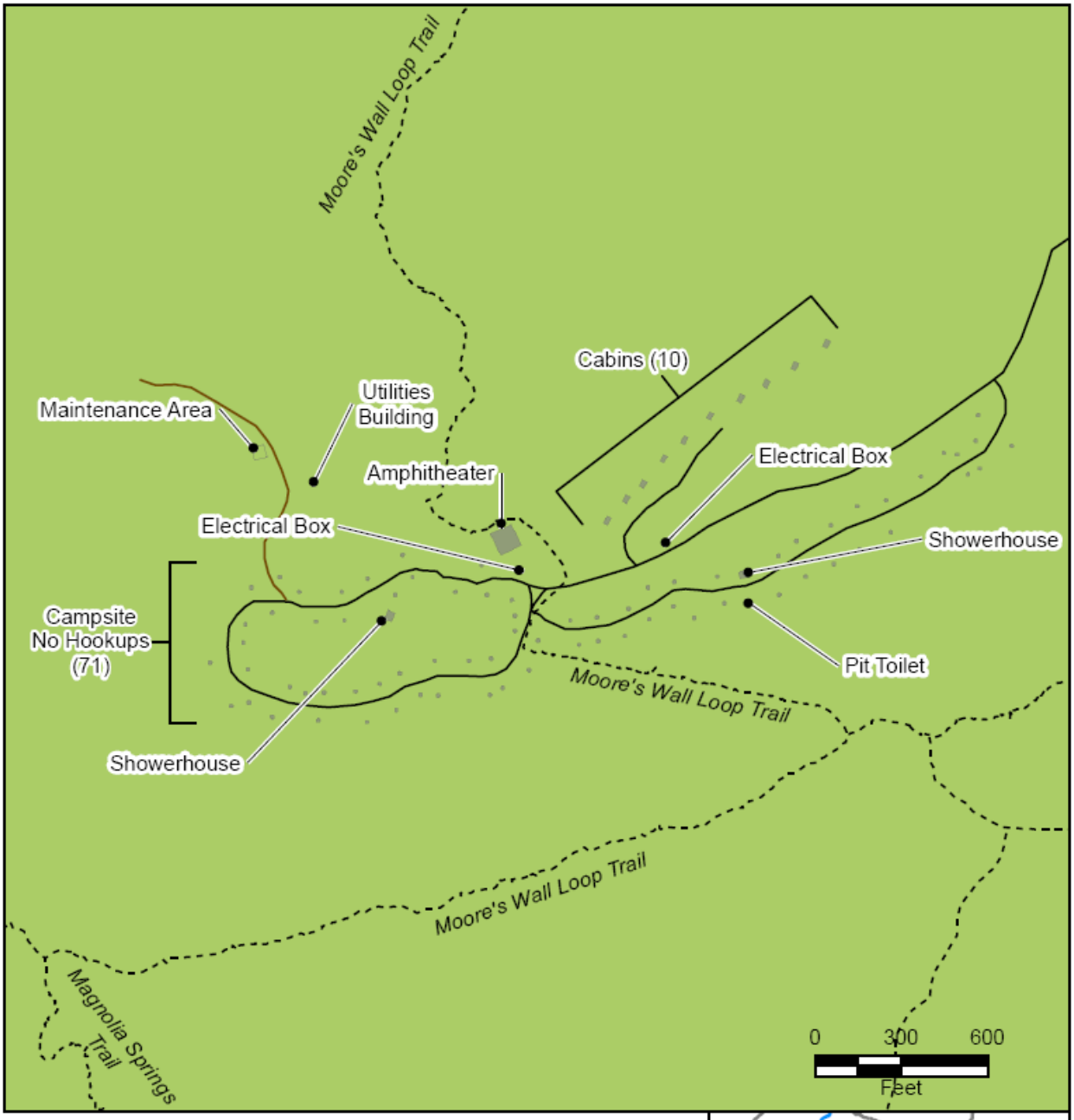
HARO0095	Site 63	Campsite - No Hookups
HARO0096	Site 64	Campsite - No Hookups
HARO0097	Site 65	Campsite - No Hookups
HARO0098	Site 66	Campsite - No Hookups
HARO0099	Site 67	Campsite - No Hookups
HARO0100	Site 70	Campsite - No Hookups
HARO0101	Site 68	Campsite - No Hookups
HARO0102	Site 69	Campsite - No Hookups
HARO0103	Site 71	Campsite - No Hookups
HARO0104	Site 72	Campsite - No Hookups
HARO0105	Site 73	Campsite - No Hookups
HARO0106	Cabin 1	Cabin - Vacation
HARO0107	Cabin 2	Cabin - Vacation
HARO0108	Cabin 3	Cabin - Vacation
HARO0109	Cabin 4	Cabin - Vacation
HARO0110	Cabin 5	Cabin - Vacation
HARO0111	Cabin 6	Cabin - Vacation
HARO0112	Campground Electrical Box 1	Electrical Box
HARO0113	Campground Electrical Box 2	Electrical Box
HARO0114	Campground Utilities Building	Utilities Building
HARO0115	Campground Maintenance Area	Maintenance Area
HARO0116	Campground Showerhouse 1	Showerhouse
HARO0117	Campground Storage Building	Storage Building
HARO0118	Campground Showerhouse 2	Showerhouse
HARO0119	Campground Pit Toilet	Toilet Building - Non-Flush
HARO0120	Campground Amphitheater	Amphitheater
HARO0121	Cabin 7	Cabin - Vacation
HARO0122	Cabin 8	Cabin - Vacation
HARO0123	Cabin 9	Cabin - Vacation
HARO0124	Cabin 10	Cabin - Vacation
HARO0125	Bathhouse	Bathhouse
HARO0126	Boathouse	Boathouse
HARO0127	Swimming Area Parking	Parking Area - Public
HARO0128	Swimming Area Toilet 1	Toilet Building
HARO0129	Swimming Area Toilet 2	Toilet Building
HARO0130	Picnic Shelter	Picnic Shelter
HARO0131	Swimming Area Picnic Area	Picnic Area
HARO0132	Swimming Area	Swimming Area
HARO0133	Swimming Area Pier	Pier
HARO0134	Visitor Center Picnic Shelter 1	Picnic Shelter
HARO0135	Visitor Center Toilet 1	Toilet Building
HARO0136	Visitor Center Toilet 2	Toilet Building

HARO0137	Visitor Center Picnic Shelter 2	Picnic Shelter
HARO0138	Visitor Center Parking	Parking Area - Public
HARO0139	Visitor Center	Visitor Center
HARO0140	Picnic Area	Picnic Area
HARO0141	Swimming Area Beach	Beach
HARO0142	Observation Structure	Observation Structure
HARO0143	Cascade Trail Parking	Parking Area - Public
HARO0144	Equestrian Parking	Parking Area - Public
HARO0145	Park Residence	Park Residence
HARO0146	Parking Area - Staff	Parking Area - Staff
HARO0022	Group Camp Area	Group Camp - Drive To
HARO0008	Group Site 5	Campsite - No Hookups
HARO0013	Group Camp Toilet 2	Toilet Building - Non-Flush
HARO0004	Group Site 1	Campsite - No Hookups
HARO0007	Group Site 4	Campsite - No Hookups
HARO0006	Group Site 3	Campsite - No Hookups
HARO0005	Group Site 2	Campsite - No Hookups
HARO0012	Group Camp Toilet 1	Toilet Building - Non-Flush
HARO0147	New Entrance Station	Entrance Station
HARO0148	New Showerhouse	Showerhouse
HARO0149	Park Office Parking - Staff	Parking Area - Staff
HARO0150	Moore Wall Toilet Building	Toilet Building
HARO0151	Moore Wall Parking	Parking Area - Public

20,952 feet of Paved Road
5,114 feet of Unpaved Road


Hidden Falls Trail
Picnic Shelters
Picnic Area
Toilet Buildings
Visitor Center
Parking Area - Public
Hanging Rock Trail
Upper Cascades Trail
0
250
500
Feet
Hanging Rock State Park
Facilities Inventory
Visitor Center
November 2010
Road - Paved
Trail
State Park
N
268
89


Park Residence
Fuel Storage Building
Warehouse & Lift Bay
Vehicle & Equipment Garage
Storage Buildings
Maintenance Shop
Maintenance Office
Well House
0 100 200 300
Feet
Hanging Rock State Park
Facilities Inventory
Maintenance Area
November 2010
State Park
Road - Paved
N
268
89



Hanging Rock State Park
Facilities Inventory

Campground

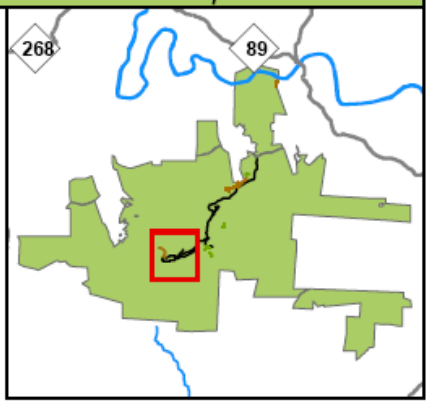
November 2010

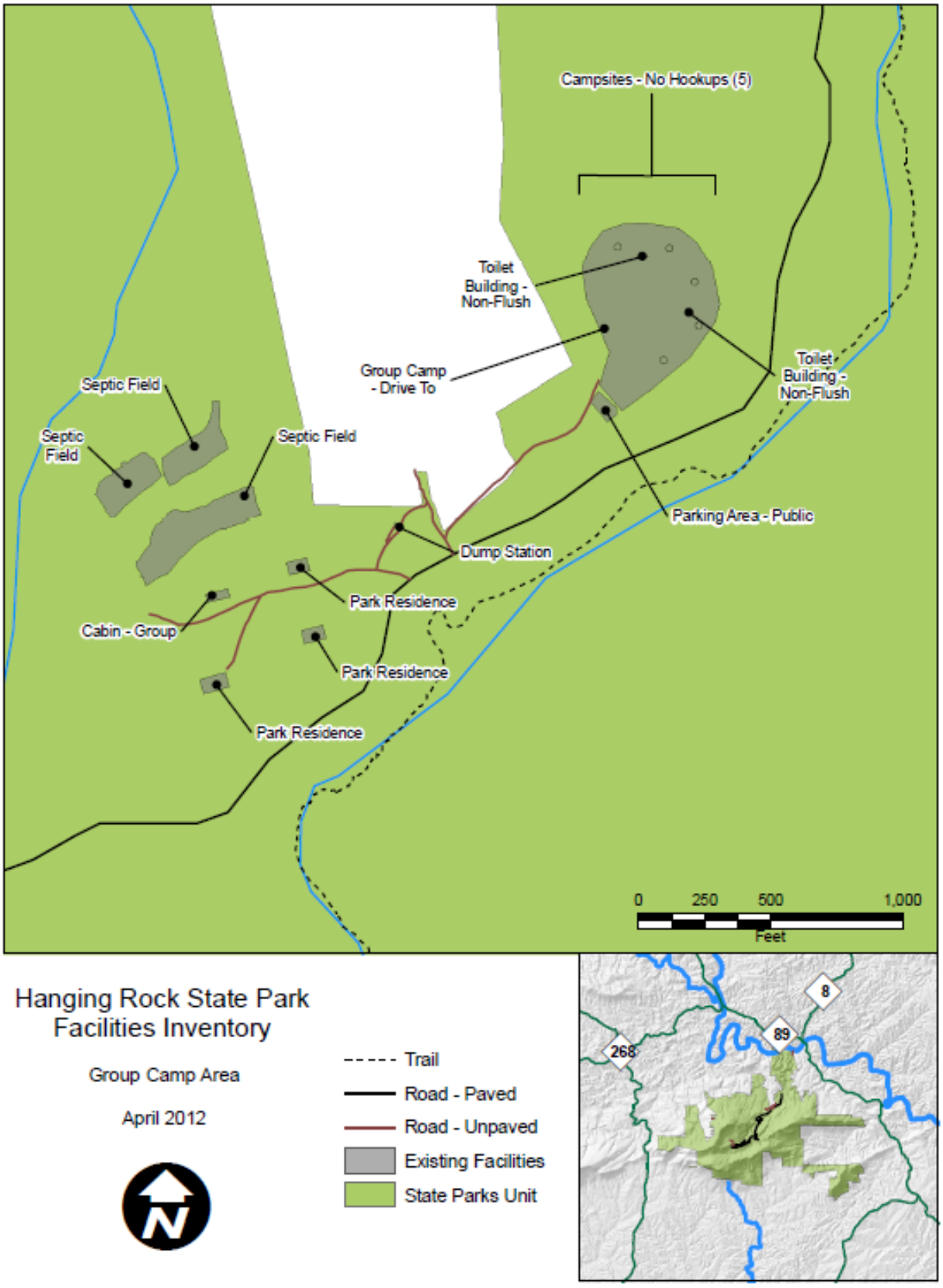
State Park

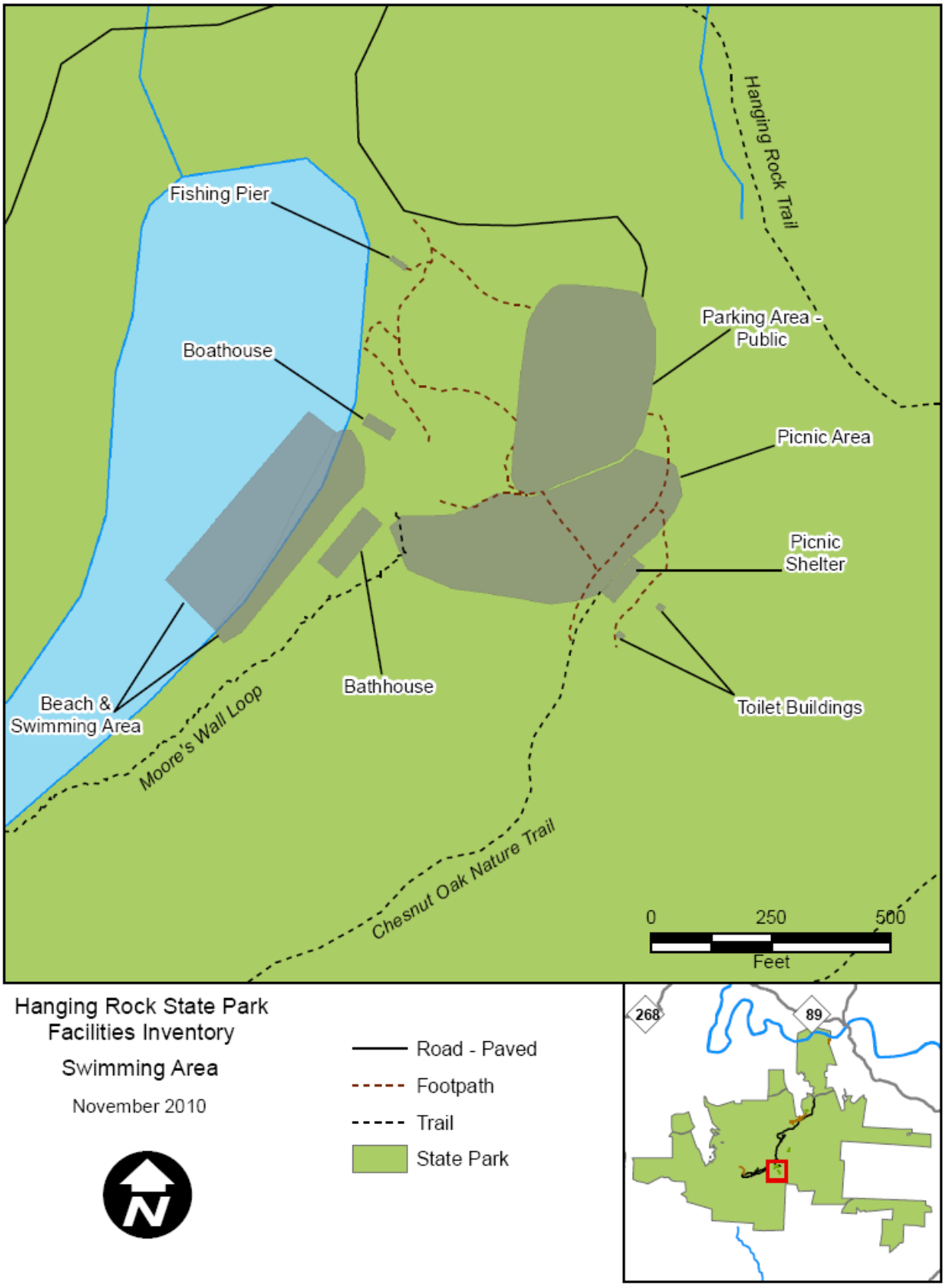
Road - Paved

Road - Unpaved

Trail




Campsites - No Hookups (5)
Toilet Building - Non-Flush
Group Camp - Drive To
Toilet Building - Non-Flush
Septic Field
Septic Field
Septic Field
Parking Area - Public
Dump Station
Park Residence
Cabin - Group
Park Residence
Park Residence
0
250
500
1,000
Feet
Hanging Rock State Park
Facilities Inventory
Group Camp Area
April 2012
Trail
Road - Paved
Road - Unpaved
Existing Facilities
State Parks Unit
8
89
268


Hanging Rock Trail
Fishing Pier
Parking Area - Public
Boathouse
Picnic Area
Picnic Shelter
Bathhouse
Beach & Swimming Area
Toilet Buildings
Moore's Wall Loop
Chesnut Oak Nature Trail
0
250
500
Feet
Hanging Rock State Park
Facilities Inventory
Swimming Area
November 2010
Road - Paved
Footpath
Trail
State Park
268
89

TRAILS INVENTORY
HANGING ROCK STATE PARK
2012

Hanging Rock State Park (HARO) is one of the most visited parks within the State Parks System and its 13 named trails with some 22 + miles of trails are one of its most enjoyed visitor facilities. Three of HARO trails are also designated as a segment of North Carolina's Mountains-to-Sea Trail.

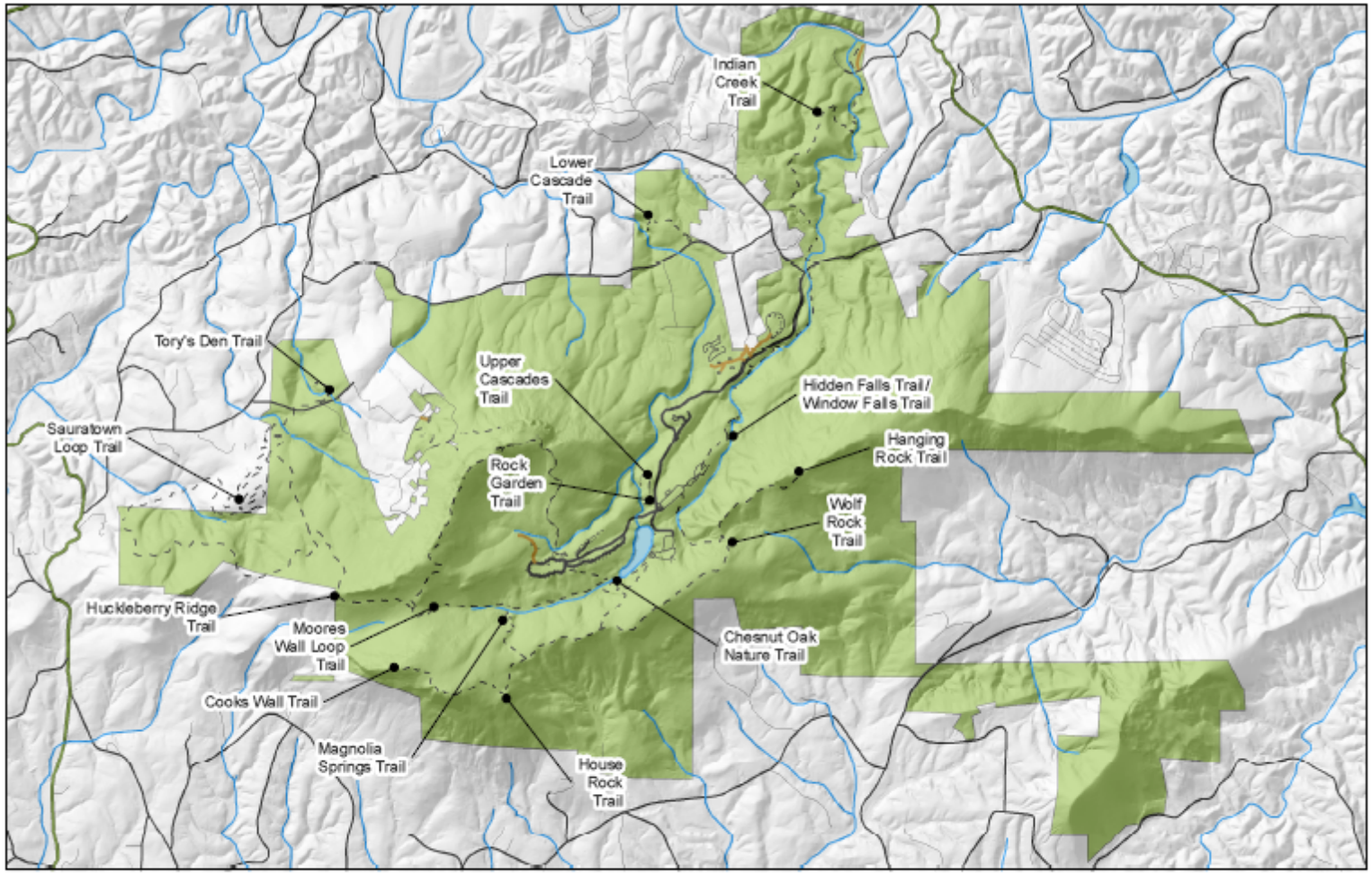
The State Trails Program staff has worked with park staff to collect GPS data on all HARO trails and have evaluated the condition of all trails. All trails within HARO were evaluated as either good or fair condition. Trails evaluated as "good" need routine maintenance that can be performed by park staff and volunteers. Trails evaluated "fair" should be renovated as a major maintenance project. Another option is for all trails evaluated "fair" to be combined into one or more capital improvement projects.

During this trail evaluation process, staff talked with representatives from local governments, non-profit organizations; and with local businesses to learn their thoughts about existing and potential new park trails and paddle access areas. Externally, great support exists for the park, for its trails and there is interest in HARO expanding its trails to help draw additional visitors to the area, tourists that can help support and grow the local economy of the area.

The following represents a snapshot of the information collected on existing trails and new trail recommendations.

Evaluation of Existing Trails in HARO

Trail Name	Trail Length	Trail Conditions	Repair Renovations
Hanging Rock Trail	1.3 Miles	Good	Park Staff
Upper Cascade Trail	.2 Mile	Good	Park Staff
Lower Cascade Trail	.4 Mile	Good	Park Staff
Moore's Wall Trail Segment 1	1 Mile	Good	Park Staff
Moore's Wall Trail Segment 2	3.3 Miles	Fair	Major Maintenance
Tory's Den Trail Segment 1	.4 Mile	Good	Park Staff
Tory's Den Trail Segment 2	2 Miles	Fair	Major Maintenance
Wolf Rock Trail	1.4 Miles	Fair	Major Maintenance
Cooks Wall Trail	1.6 Miles	Fair	Major Maintenance
Magnolia Springs Trail	.3 Mile	Fair	Major Maintenance
Chestnut Oak Nature Trail	.7 Mile	Fair	Major Maintenance
Indian Creek Trail	2.6 Miles	Fair	Major Maintenance
Sauratown Loop Trail	6 Miles	Fair/Poor	Major Maintenance
Huckleberry Ridge Trail	.5 Mile	Good	
Rock Garden Trail	.1 Mile	Good	


Indian Creek Trail
Lower Cascade Trail
Tory's Den Trail
Upper Cascades Trail
Hidden Falls Trail/ Window Falls Trail
Sauratown Loop Trail
Hanging Rock Trail
Rock Garden Trail
Wolf Rock Trail
Huckleberry Ridge Trail
Moores Wall Loop Trail
Chesnut Oak Nature Trail
Cooks Wall Trail
Magnolia Springs Trail
House Rock Trail
Hanging Rock State Park
Trail Inventory
April 2011
State Park
Existing Trail
Road - Paved
Road - Unpaved
N
0
0.5
1
Miles

INTERPRETATION AND EDUCATION DATA
HANGING ROCK STATE PARK
2012

Year	Participants at Park Programs	Participants in Outreach Programs	Total Program Participants
2006	4,112	388	4,500
2007	3,690	1,290	4,980
2008	2,769	330	3,099
2009	2,949	35	2,984
2010	3,528	62	3,590
2011	6,293	190	6,483

Table 1.
Number of participants in organized I&E programs and events from 2006-2011. Outreach Programs refer to all programs conducted for offsite audiences including schools, events and meetings in the community.

EXHIBITS AND SIGNAGE
HANGING ROCK STATE PARK
2012

Exhibits and signs in North Carolina State Parks can be regulatory, orientation or interpretive. This signage follows system wide sign guidelines that preserve the North Carolina state park brand and ensure maximum accessibility. Signs also express the character of the individual park.

All park exhibits and signs in and around the park were inventoried and evaluated in 2010.

VISITOR CENTER EXHIBITS

The visitor center functions as a portal to the park that helps visitors make the physical and emotional transition from their journey to the natural surroundings of the park. The visitor center has interpretive exhibits in the lobby, public hallway, and on the back deck that are designed to introduce the park's primary and secondary interpretive themes. A 100-square foot dedicated exhibit hall features graphics, artifacts and dioramas that expand on the themes. The lobby area contains informational exhibits about weather and brochure racks with maps and park information. The original exhibits were installed in the late 1990s with renovations completed in 2006. Design and construction followed division standards, state codes and accessibility mandates from that time. Some exhibits have been updated since then.

There are a handful of retail displays in the lobby, where pins, hats, jewelry and patches are displayed.

Exhibit lighting: the existing track lighting system is old, unreliable and inefficient. Low light levels in the exhibit hall may compromise both graphics readability and a clear navigation pathway through the room.

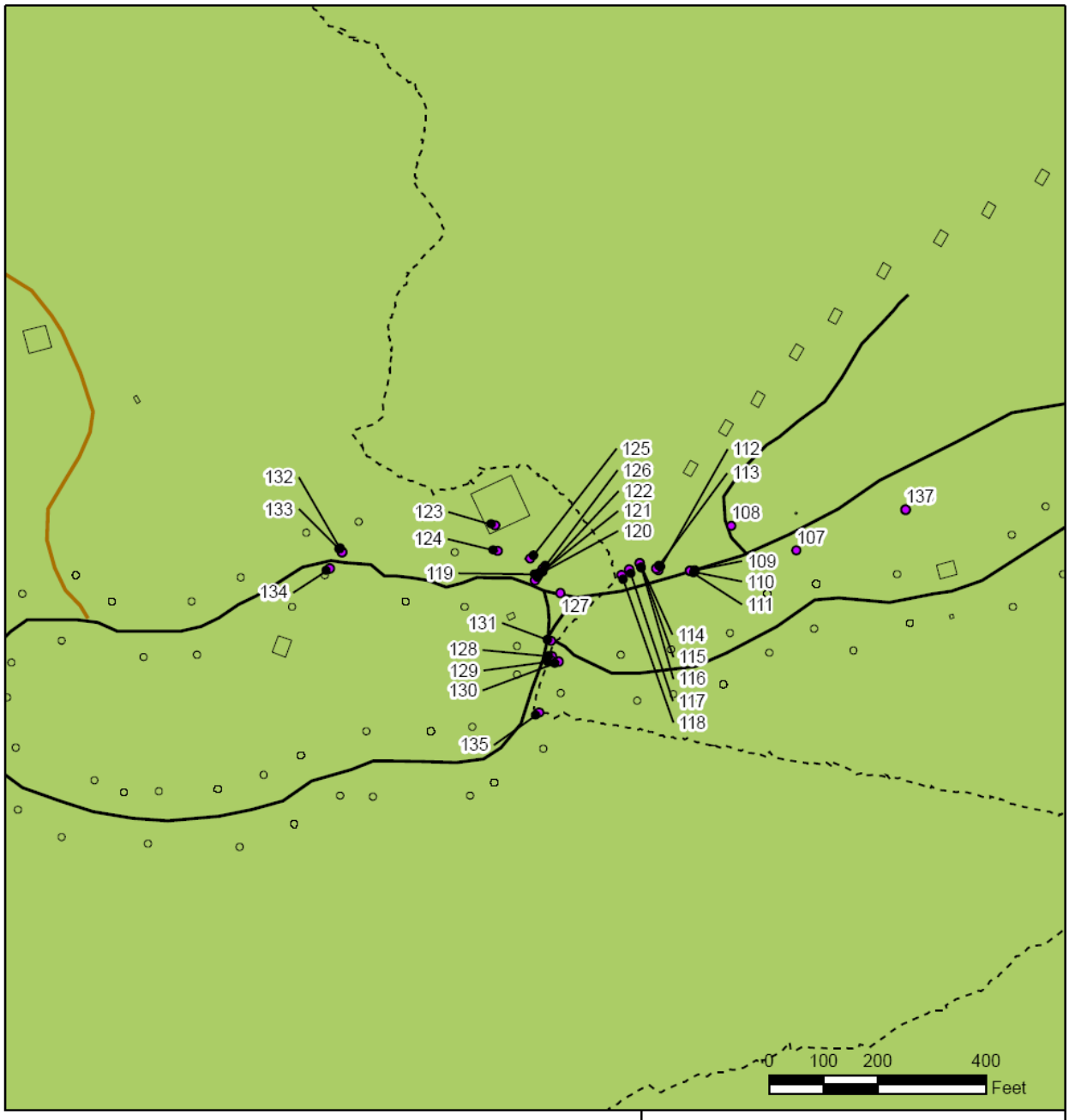
PARKWIDE INTERPRETIVE DISPLAYS

The interpretive themes presented in the visitor center are extended out across the park using wayside displays and interpretive trails with brochures. In general, each piece of interpretation is well sited, although view management may be necessary for displays like the Hanging Rock panel to be effective.

Most interpretive displays in the park are located in upright kiosks.

PARKWIDE WAYFINDING SYSTEM

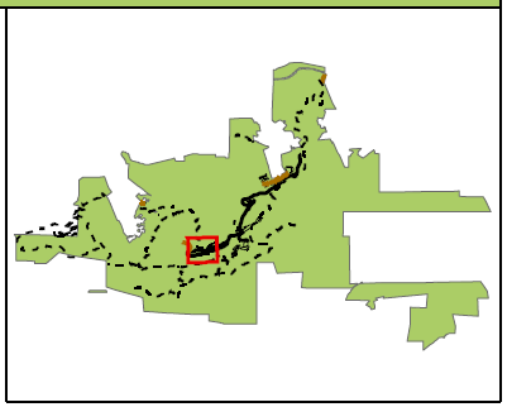
An inventory of the park signs was completed in 2010. Carved wooden signs across the park are well kept, inspected annually, and repainted as needed. There is very little vandalism. Park staff manages the wayfinding system to ensure visitors can easily navigate through the park. The campground entrance and trailhead areas tend to have multiple signs, leading to a sign overcrowding effect in some cases.

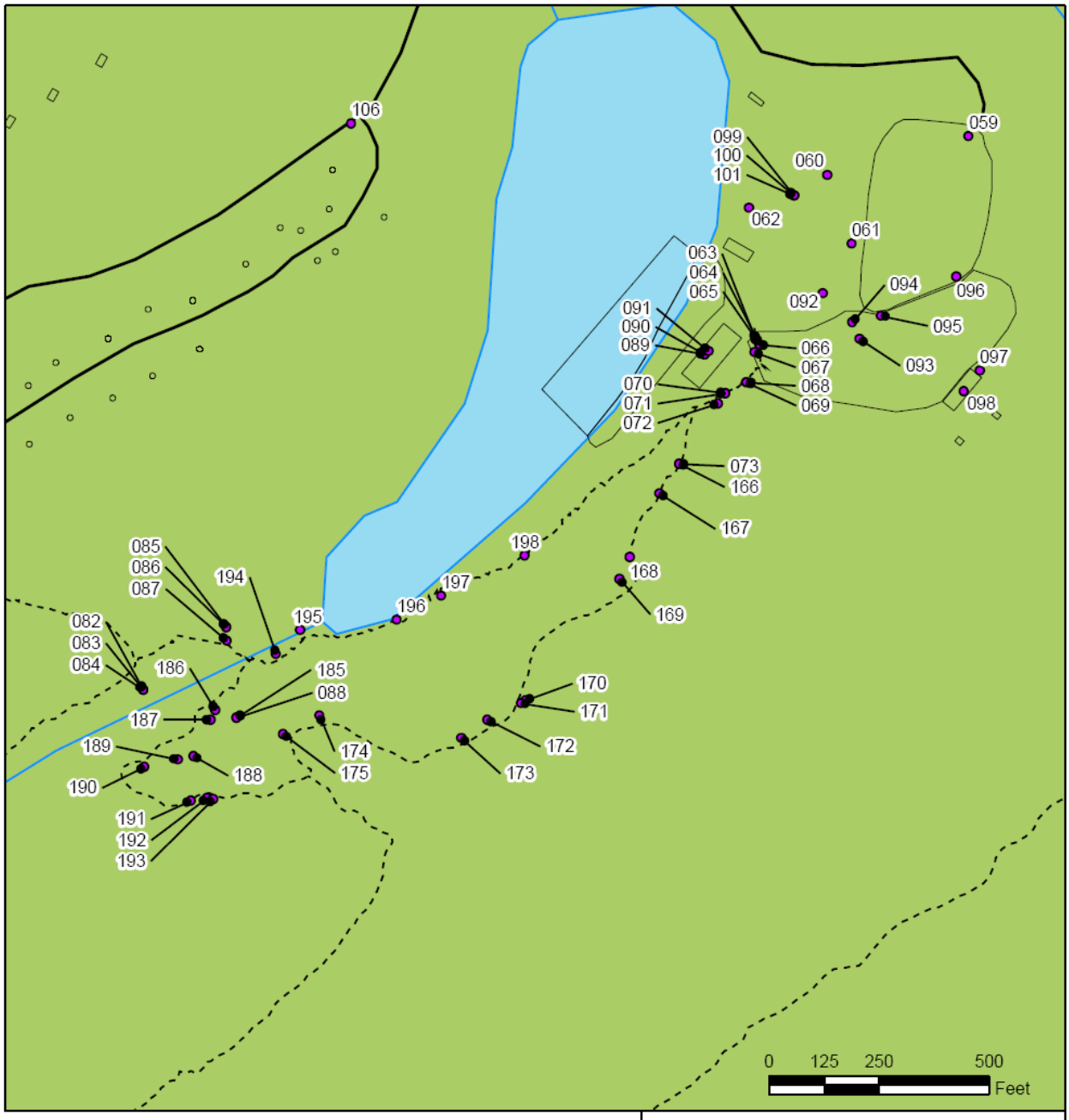


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

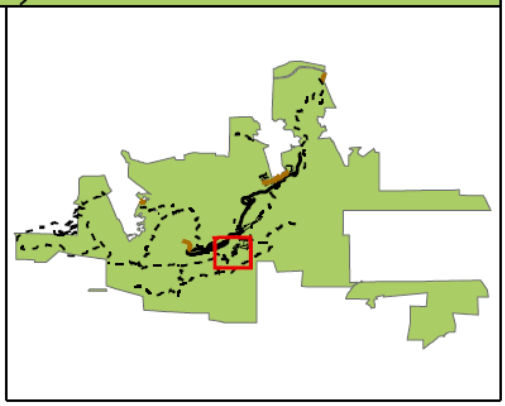


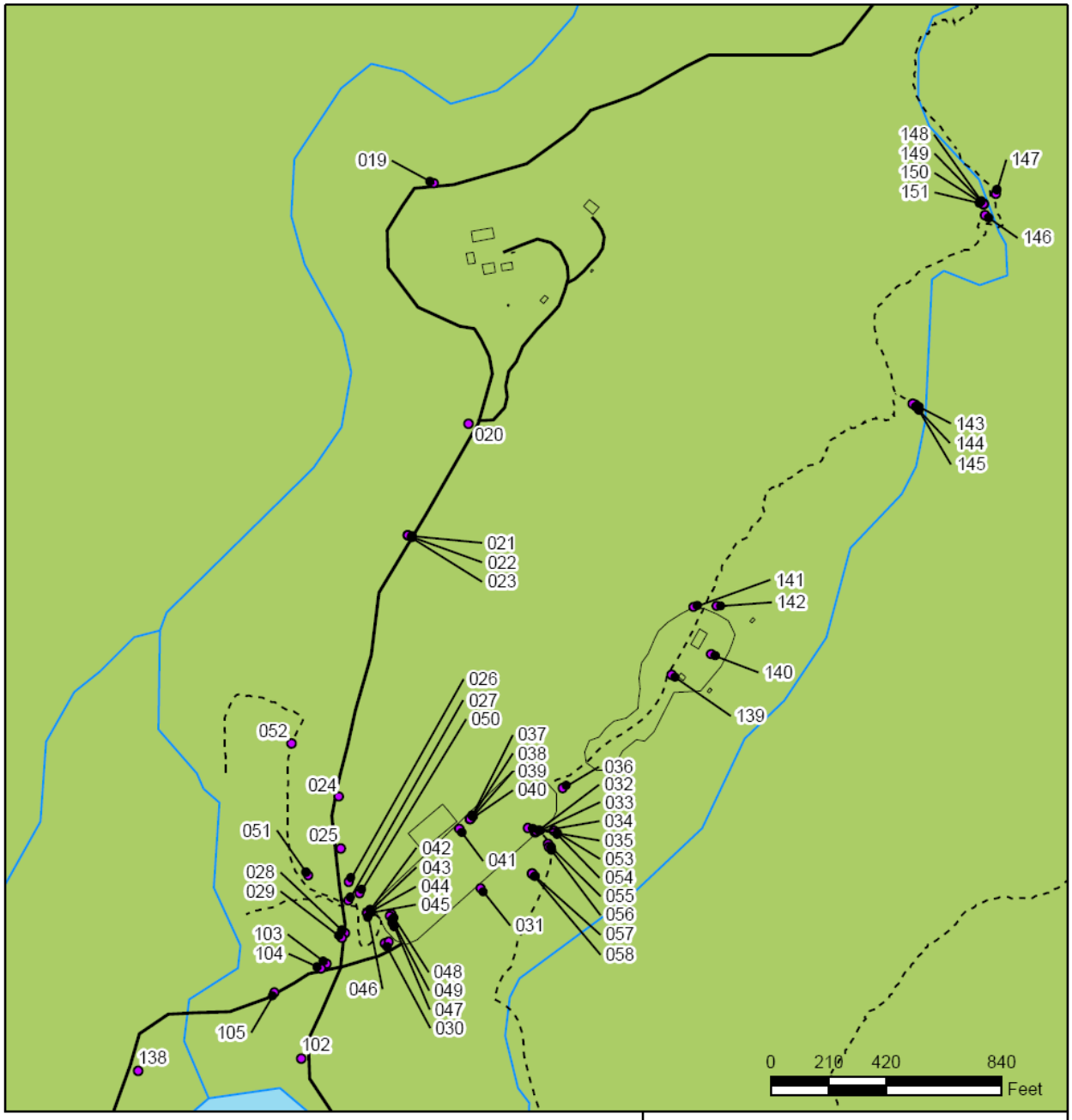


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

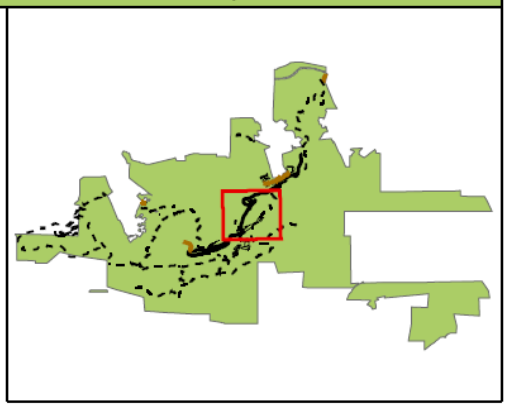


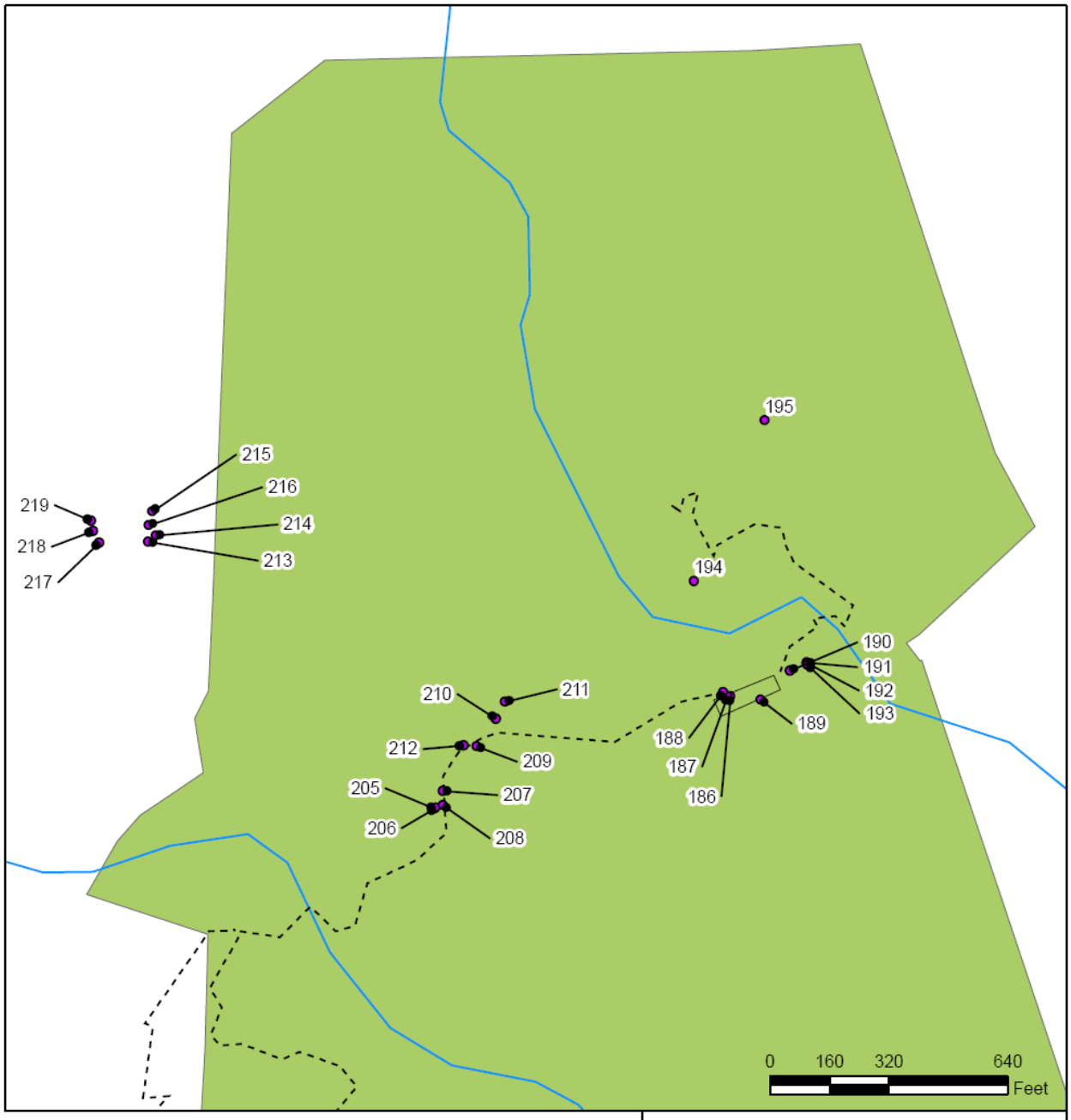


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

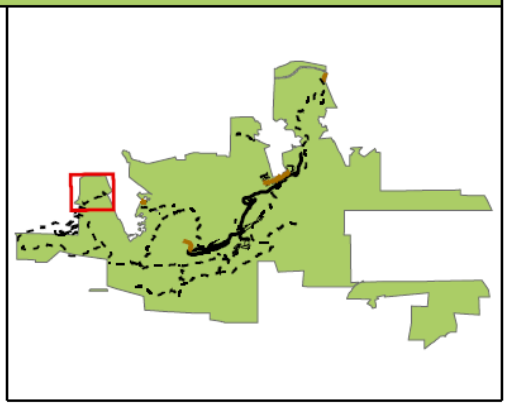


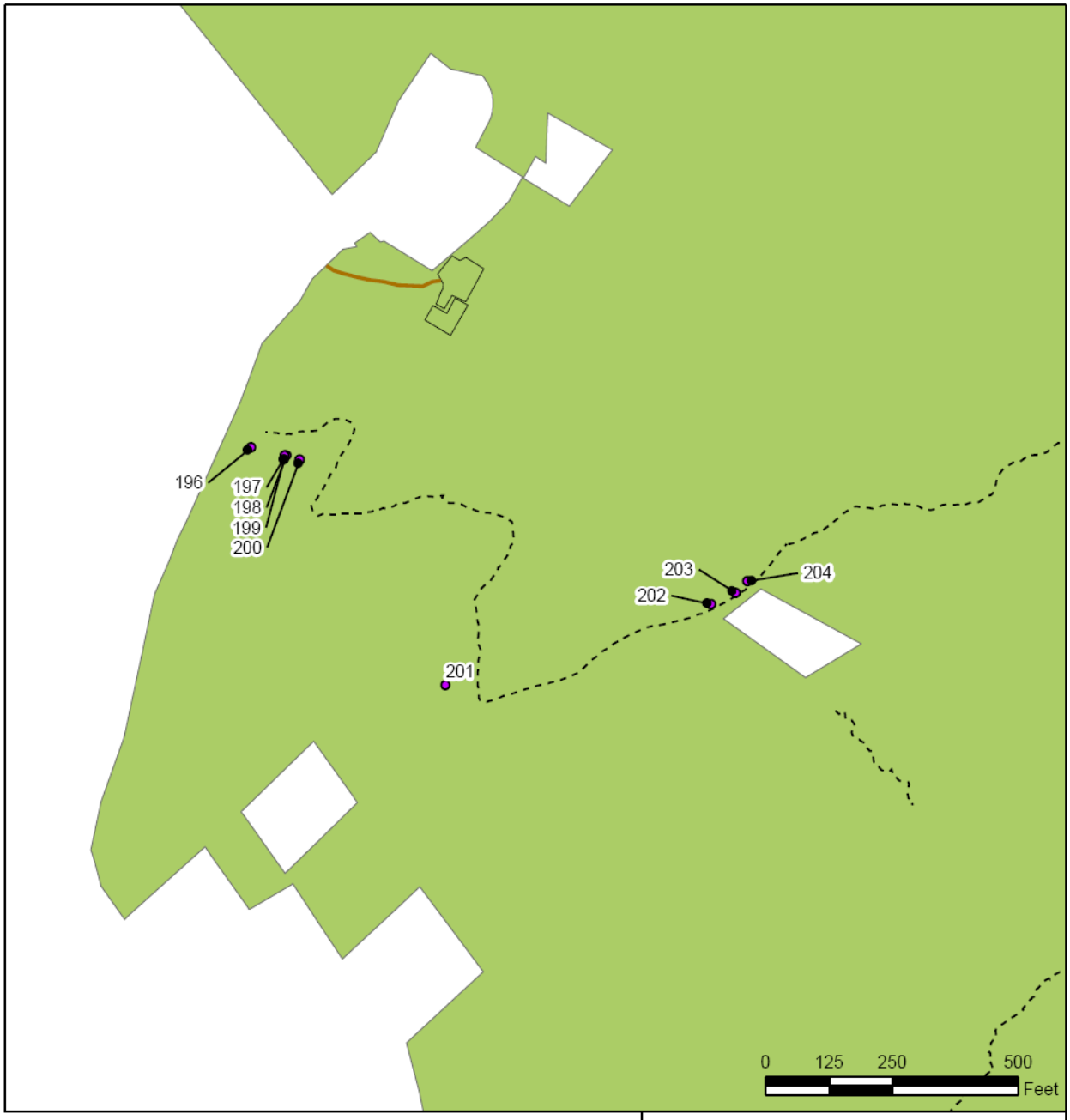


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

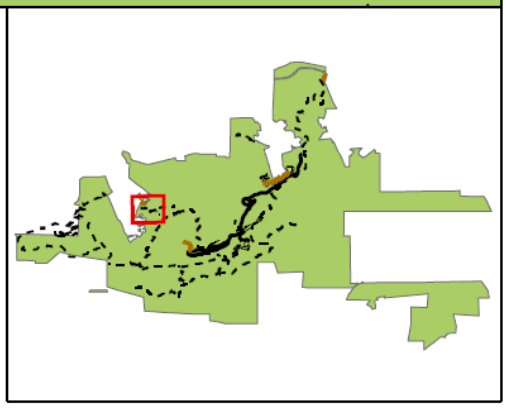


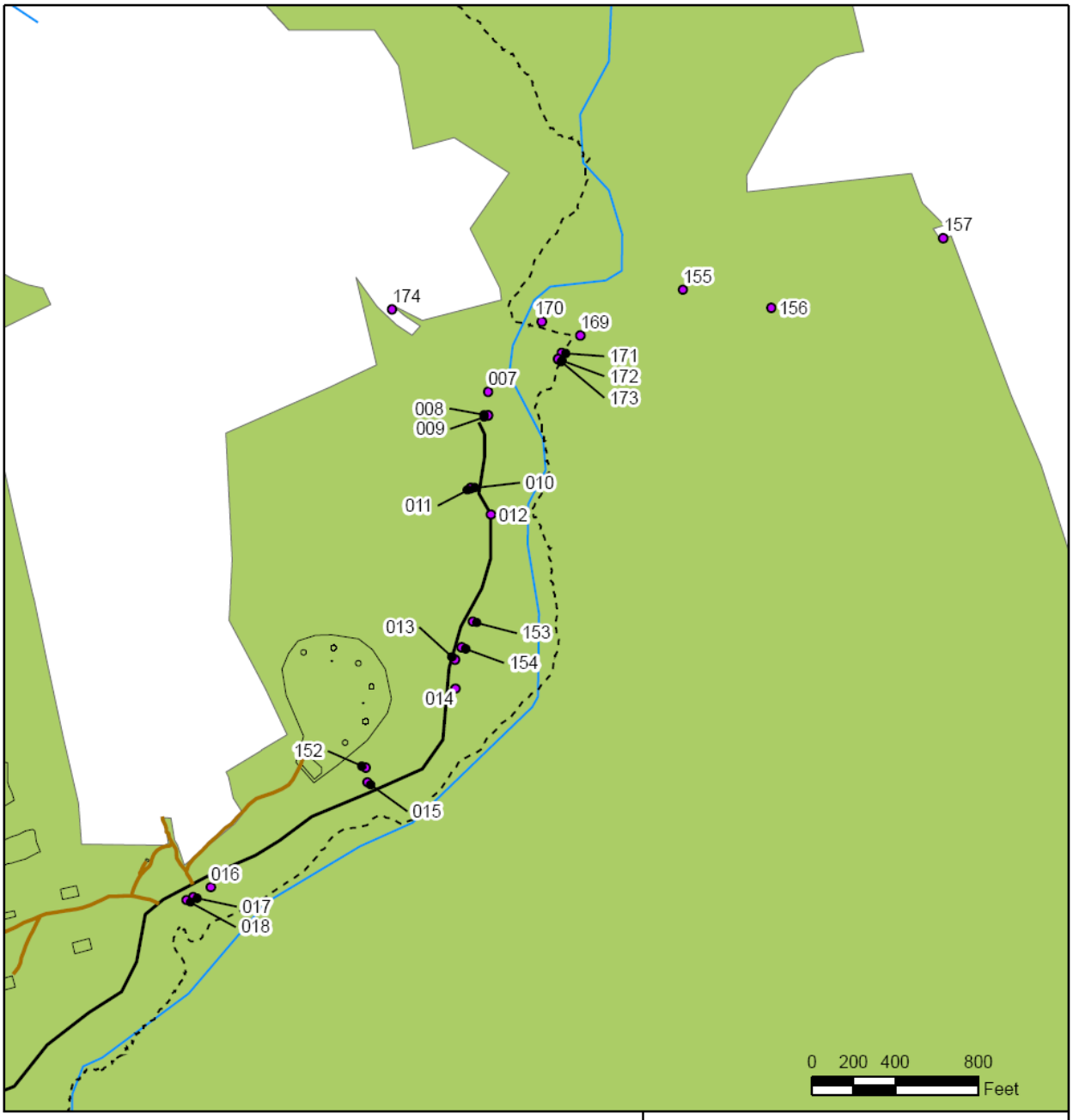


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

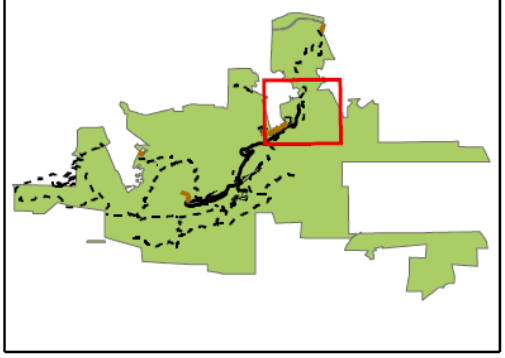


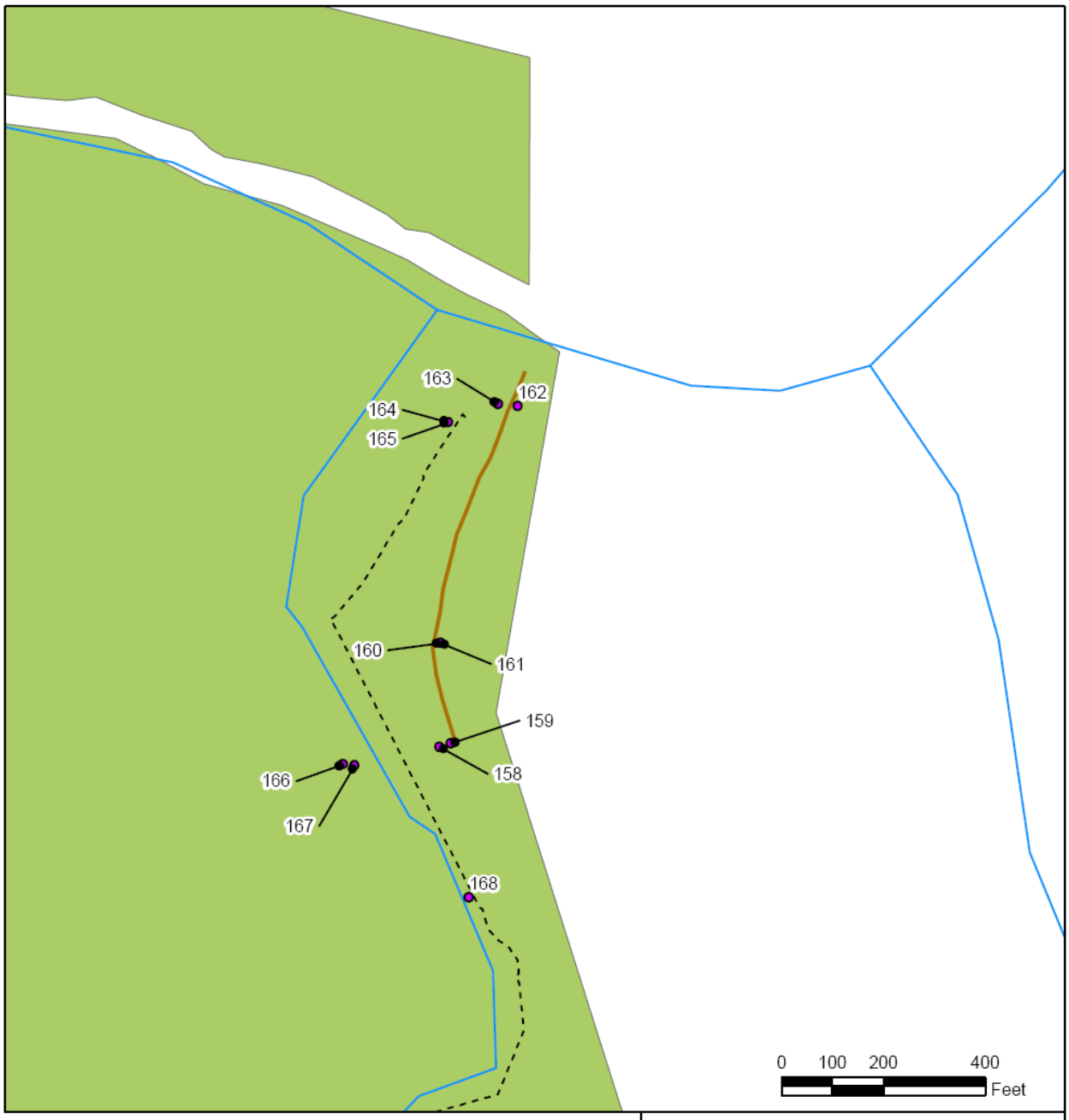


Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit

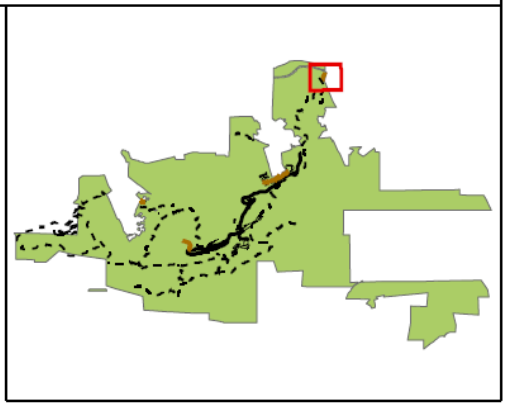




Hanging Rock
State Park
Sign Inventory

April 2011

Signs
Trail
Road - Paved
Road - Unpaved
State Parks Unit



NATURAL COMMUNITIES

Carolina Hemlock Bluff: This community occurs on steep, exposed bluffs and gorges within the park and is frequently interspersed with Chestnut Oak Forests. The canopy is well developed, with Carolina hemlock (*Tsuga caroliniana*) as the dominant canopy species; chestnut oak (*Quercus prinus*) and red maple (*Acer rubrum*) are also common canopy species. The shrub layer is typically a dense layer of heaths dominated by mountain rosebay (*Rhododendron catawbiense*) and mountain laurel (*Kalmia latifolia*). Although this community occurs throughout the Blue Ridge, disjunct examples in the Piedmont are uncommon and are highly significant. Well developed examples of this community are found on Moore's Wall, along Cascade Creek, and along Indian Creek. The communities in the gorges along Cascade and Indian creeks are particularly notable in that this community type occurs only rarely in small creek gorges at low elevations. All of these sites have suffered from localized trampling; however, due to the steepness of the terrain, they are largely inaccessible and undisturbed.

Pine-Oak Heath: This is a heterogeneous community type that frequently borders rocky summit communities, and although it is common throughout the Blue Ridge, disjunct examples in the Piedmont are quite rare. It generally occurs below 4,000 feet on exposed, sharp ridges and steep south facing slopes, typically with highly acidic soils. These communities are among the driest and most exposed on the landscape and are unusually prone to wind and lightning. They are believed to be heavily dependent on periodic fire, sometimes severe, in order to maintain the shade-intolerant species that dominate. In the absence of fire, the community's structure will likely become shrub-dominated.

It is commonly dominated by stunted and gnarled pine species, particularly Virginia pine (*Pinus virginiana*), Table Mountain pine (*P. pungens*), and pitch pine (*P. rigida*). The shrub layer is generally very dense and is dominated by ericaceous shrubs, most commonly mountain laurel, blueberry (*Vaccinium* spp.), and huckleberry (*Gaylussacia* spp.) species. American chestnut was previously a major dominant in this community type. This community type often grades into a variety of oak-dominated forests, including Chestnut Oak Forest, Dry Oak-Hickory Forest, and Dry-Mesic Oak-Hickory Forest.

This community occurs within the park on Moore's Wall, Cook's Wall, and on Hanging Rock. The canopy at all three sites is dominated by pitch pine, Virginia pine, and table mountain pine. Common understory species include mountain laurel, black huckleberry (*Gaylussacia baccata*), blueberry, and bear oak.

Chestnut Oak Forest: This forest type normally occurs on slopes and ridgetops at elevations up to 4,000 feet. This is the most abundant forest type in the park and the presence of numerous disjunct mountain species makes this community significant. The best and largest example of this community occurs in the Moore's Knob-Cook's Wall area. The canopy is generally closed and is dominated by chestnut oak, with Virginia pine, red maple, black gum (*Nyssa sylvatica*),

and sourwood (*Oxydendrum arboreum*) common in the subcanopy. The shrub layer is usually dense and is typically dominated by mountain laurel, blueberry, and other heaths. Stand quality varies from excellent mature forest, with trees up to 16 inches in diameter, to young, second-growth stands. A second, younger example occurs near Huckleberry Ridge and Ruben Mountain. Extensive areas of this community are in good condition and show little impact from overuse.

Dry Oak-Hickory Forest: This community type is found throughout the Piedmont on ridgetops, steep, south-facing slopes, and deep, sheltered ravines. The canopy is dominated by dry-site oaks, usually chestnut oak, white oak (*Q. alba*), black oak (*Q. velutina*), and various hickory species, including mockernut (*Carya alba*), sweet pignut (*C. glabra*). Red maple and sourwood are common subcanopy species. These forests were once one of the predominant community types in the Piedmont. Most of their range has been subjected to intensive agricultural use and urbanization, and although these forests are still relatively common, protected examples of significant size are rare. This community type occurs in the lower areas between Moore's Knob and Cook's Wall. Although the extent of the forest in the park is not known, it appears to be in good condition and is considered to be significant due to the presence of a number of disjunct species that normally have affinities for more mountainous areas.

Rich Cove Forest: This community typically occurs in broad coves and slopes on low to moderate elevation sites. The soils are generally rich, and the biological diversity is correspondingly high. It is fairly widespread throughout the mountains and Piedmont, and is characterized by a diverse selection of canopy species that thrives in mesophytic (i.e. moderately moist) conditions. The high diversity seen in these forests makes them of great interest to botanists and ecologists.

These forests are naturally relatively stable, with old, large trees up to several centuries in age. The production of gaps is continuous but highly variable. Wind is the most likely factor to produce gaps and to kill large numbers of canopy trees. These communities typically occur in moist, protected coves, so fire is not believed to have been a major disturbance factor. The distinction between this community type and other mountain hardwood forests can be difficult, as many variations are known to occur and the transitions to other community types can be difficult to discern. However, the dominance of mesophytic tree species and a lush, diverse herbaceous layer are characteristic of this community type.

Typically, the canopy is dense and dominant species include yellow poplar, American basswood (*Tilia americana*), sugar maple (*Acer saccharum*), buckeye (*Aesculus flava*), yellow birch (*Betula lenta*), cucumber tree (*Magnolia acuminata*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), and Canada hemlock. The understory is usually open and can include flowering dogwood, Fraser's magnolia (*M. fraseri*), persimmon (*Ostrya virginiana*), and striped maple *(A. pennsylvanicum*). The herb layer is lush and extremely diverse; for a representative list, consult Schafale and Weakley. The N.C. NHP has records for a small example of this community type on the steep, north-facing slopes above the floodplain on the south side of the Dan River.

Spray Cliff: This community type occurs on gently sloping to vertical rock faces that have

waterfalls. The local humidity is very high and the moisture supply is essentially constant as a consequence of seepage and the spraying action of the waterfall. The steep terrain is usually too rocky and wet to support a closed tree canopy, and the vegetation is a variable collection of mosses, ferns, liverworts, and vascular herbs and shrubs, many of them requiring constantly moist substrates and high humidity. These communities are unusually stable; successional processes are usually slower than on drier sites, and extremes in temperatures are rare.

This community is found most often in western North Carolina in gorges associated with the Blue Ridge Escarpment; well developed examples are rarely encountered in the Piedmont. Good quality examples occur at the Lower Cascade Fall and Upper Cascade Falls. These sites are significant in that they support a wide variety of mosses and liverworts more typically associated with mountain ecosystems. Some trampling has occurred around the falls at both sites; however, most of the area at either site is inaccessible and is largely undisturbed.

Piedmont/Low Mountain Alluvial Forest: This community type occurs in river and stream floodplains in which distinct fluvial landforms, such as levees, sloughs, and ridges, and their associated vegetation zones are too small to be distinguished. These sites can be seasonally or intermittently flooded and are characterized by a canopy that is a mixture of bottomland and mesophytic species, including river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua*), yellow poplar (*Liriodendron tulipifera*), black walnut (*Juglans nigra*), and red maple. Flood-carried sediment provides nutrients to these sites and also serves as a natural disturbance factor. There is a record for a single occurrence of this community type at the park, along the floodplain of the Dan River, west of the confluence with Indian Creek.

Low Elevation Rocky Summit: This community type is rare in the Piedmont and is confined to the highest monadnocks, which are fractured formations composed of resistant rock that rise above the surrounding landscape, often abruptly. Elevation is generally below 4,000 feet, and vegetation may be interspersed with substantial areas of bare rock. A closed tree or shrub canopy is frequently absent. This community occurs on the park's steep quartzite cliffs ranging in elevation from 2,000 to 2,500 feet. Excellent examples can be found at Cook's Wall, Devil's Chimney, House Rock, Huckleberry Ridge, Moore's Wall, Ruben Mountain, Hanging Rock, and Wolf Rock.

Canopy species are scattered at each of these sites and include chestnut oak, Carolina hemlock, and Virginia pine. Shrub species rooted in rocky cracks and crevices dominate much of these areas and include mountain laurel, mountain rosebay, black huckleberry, and bear oak. Other species common to these outcrops include St. John's wort (*Hypericum* spp.), sandworts (*Arenaria* spp.), oat grass (*Danthonia* spp.), and ferns (*Polypodium* spp.). Accessible areas in the communities at Moore's Wall and Hanging Rock have lost much of their herbaceous vegetation to heavy trampling. This is of particular concern at Moore's Wall, where bear oak, a rare species that is a major component of the woody vegetation, has been damaged by climbers and hikers. The communities at Cook's Wall, Devil's Chimney, House Rock, Wolf Rock, and Huckleberry Ridge have also suffered from some trampling, but are well developed, generally inaccessible, and largely undisturbed.

Montane Acidic Cliff: This community, like the Low Elevation Rocky Summit community, is rare in the Piedmont. It is distinguished from the Low Elevation Rocky Summit community by occurring on lower, more sheltered sites. Scattered woody species produce an open habitat lacking a substantial canopy, and the best developed examples are dominated by bare rock. This community occurs at elevations ranging from 1,000 to 1,600 feet within the park and is confined to steep quartzite cliffs. Well developed examples occur at the Lower and Upper Cascade Falls; a third example occurs in the Tory's Falls-Tory's Den area. These communities are significant in that they represent Piedmont disjuncts of a montane community type. Canopy species at all of these sites are scattered and include Virginia pine, chestnut oak, Carolina hemlock, and pitch pine. Understory vegetation is generally limited to shrubby species growing in pockets and crevices and includes mountain laurel, great laurel, blueberry, trailing arbutus (*Epigaea repens*), and sand myrtle *(Leiophyllum* spp.). Each of these sites has suffered from trampling (especially at the Upper Cascade Falls); however, most of the area at these sites is steep and has suffered little disturbance.

Other community types: There are records for additional community types at the park in the DPR natural resource image database. These include Hillside Seepage Bog, Rocky Bar and Shore, Sand and Mud Bar, Upland Pool, Piedmont/Coastal Plain Acidic Cliff, Piedmont/Coastal Plain Heath Bluff, and Piedmont Monadnock Forest. Although examples of these types may exist, the NRID records contain no documentary evidence, such as location, species, or even the dates of entry. They also do not appear in the NC NHP's GIS database or the county inventory. More work is needed to document the accuracy of these records.

NATURAL HERITAGE - BIODIVERSITY

To date, over 1,400 species have been documented at the park, and the records for these species are maintained in the DPR NRID. Although the park's species database is comparable to other parks in the region, it is likely to increase substantially as additional inventory surveys are undertaken. Additional information on the park's rare species appears elsewhere in this chapter.

Amphibians and Reptiles There are 23 amphibian species from five families and 26 reptile species from six families known from the park. These records include two venomous species, the copperhead (*Agikstrodon contortrix*), and the timber rattlesnake (*Crotalus horridus*). There are four state-listed rare amphibian and reptile species: Wehrle's salamander (*Plethodon wehrlei*), scarlet kingsnake (*Lampropeltis triangulum elapsoides*), eastern smooth earth snake (*Virginia valeriae valeriae*), and the timber rattlesnake (*Crotalus horridus*).

Birds There are approximately 400 bird species known from North Carolina, and the park has records for 146 species that cover 42 families. These include 24 rare species, but only two are known or suspected to be reproducing on the park: the common raven (*Corvus corax*), and the Peregrine Falcon (*Falco peregrinus*), which has been federally de-listed by the U.S. Fish and Wildlife Service but remains state-listed.

Fish There are records for 33 species from six families. The NHP tracks six fish species, including the Orangefin Madtom (*Noturus gilberti*), which is state and federally-listed.

Fungus The park has records for 98 species covering 34 families. There are no records for rare fungus species.

Insects The park has records for 274 species covering 87 families. There are records for three rare species from the park, most notably the Mountain River Cruiser (*Macromia margarita*), which is state and federally-listed.

Lichens The park has 47 records covering 15 families. There are records for two rare species: the waterfan (*Peltigera hydrothyria*), and the coral saucer lichen (*Ochrolechia yasudae*).

Mammals There are approximately 75 native and five non-native mammal species in North Carolina, and the park has records for 27 species from 14 families. All are common to eastern North American, and the records include one state-listed species, the Little Brown Myotis bat (*Myotis lucifugus*). The park's mammals cover a range of terrestrial and aquatic habitats and notable records include the bobcat (*Lynx rufus*), the black bear (*Ursus americanus*), four bat species, and the coyote (*Canis latrans*).

Mollusks There are records for 13 species from seven families. There is one state-listed rare species, the Eastern Lampmussel (*Lampsilis radiata*).

Mosses The park has only two moss species in the database, including translucent orthodontium (*Orthodontium pellucens*), which is state-listed.

Vascular Plants The park has records for 686 vascular plant species from 111 families. The N.C. NHP tracks approximately 67 rare species, 37 of which are on the NC Watch List and therefore are not actively monitored. Notable rare species include bear oak, which is state-listed and occurs here at the periphery of its range; and Schweintitz's sunflower, and bent avens, both of which are state and federally-listed.

NATURAL HERITAGE PROGRAM ELEMENT OCCURRENCES

Amphibian	**Scientific Name**	**Fed. Status**	**NC Status**
Wehrle's Salamander	*Plethodon wehrlei*	None	T
Bird			
Peregrine Falcon	*Falco peregrinus*	None	E
Common Raven	*Corvus corax*	None	W2
Fish	**Scientific Name**	**Fed. Status**	**NC Status**
Orangefin Madtom	*Noturus gilberti*	FSC	E
Bigeye Jumprock	*Moxostoma ariommum*	None	T

Cutlip Minnow	*Exoglossum maxillingua*	None	SC
Riverweed Darter	*Etheostoma podostemone*	None	SC
River Chub	*Nocomis micropogon*	None	W5
Insect			
Mountain River Cruiser	*Macromia margarita*	FSC	SR
Owlet Moth	*Hemeroplanis nr. obliqualis*	None	SR
Gibbous Shield-back Katydid	*Atlanticus gibbosus*	None	W3
Mammal			
Little Brown Myotis	*Myotis lucifugus*	None	W5
Mollusk			
Eastern Lampmussel	*Lampsilis radiata*	None	T
Moss			
Translucent Orthodontium	*Orthodontium pellucens*	None	SR-O
Reptile			
Timber Rattlesnake	*Crotalus horridus*	None	SC
Scarlet Kingsnake	*Lampropeltis triangulum elapsoides*	None	W1, W5
Eastern Smooth Earth Snake	*Virginia valeriae valeriae*	None	W2
Vascular Plant			
Bent Avens	*Geum geniculatum*	FSC	T
Schweinitz's Sunflower	*Helianthus schweinitzii*	E	E
Bear Oak	*Quercus ilicifolia*	None	T
Elm-leaf Goldenrod	*Solidago ulmifolia*	None	SR-D
Greenland Sandwort	*Minuartia groenlandica*	None	SR-D
Cuthbert's Turtlehead	*Chelone cuthbertii*	FSC	SR-L
Shinyleaf Meadowsweet	*Spiraea betulifolia ssp. corymbosa*	None	SR-O
Alabama Grapefern	*Sceptridium jenmanii*	None	SR-P
Appalachian Golden-banner	*Thermopsis mollis*	None	SR-P
Bigleaf Magnolia	*Magnolia macrophylla*	None	SR-P
Bradley's Spleenwort	*Asplenium bradleyi*	None	SR-P
Downy Alumroot	*Heuchera pubescens*	None	SR-P
Earle's Blazing Star	*Liatris squarrulosa*	None	SR-P
Midwestern Indian-physic	*Gillenia stipulata*	None	SR-P
Mountain Camelia	*Stewartia ovata*	None	SR-P

Narrow-leaved Aster	*Symphotrichum leave*	None	SR-P
Northern Cup-plant	*Silphium perfoliatum*	None	SR-P
Northern Witch Grass	*Dicanthelium boreale*	None	SR-P
Purple Willowherb	*Epilobium angustifolium*	None	SR-P
Rough Blazing Star	*Liatris aspera*	None	SR-P
Sandhills Wild Petunia	*Ruellia ciliosa*	None	SR-P
Southern Loosestrife	*Lysimachia tonsa*	None	SR-P
Ash-leaved Golden Banner	*Thermopsis fraxinifolia*	None	SR-T
Large Witch-alder	*Fothergilla major*	None	SR-T
Long beach Seedbox	*Ludwigia brevipes*	None	SR-T
Small Rabbit Tobacco	*Pseudognaphalium micradenium*	None	SR-T
Spanglegrass	*Chasmanthium nitidum*	None	SR-T
Sweet Pinesap	*Monotropsis odroata*	None	SR-T
Virginia Cup-plant	*Silphium connatum*	None	SR-T
Carolina Holly	*Ilex ambigua*	None	W1
Large Whorled Pogonia	*Isotria verticillata*	None	W1
Piedmont Gerardia	*Agalinis decemloba*	None	W1
Pin Oak	*Quercus palustris*	None	W1
Purple Chokecherry	*Aronia prunifolia*	None	W1
Showy Skullcap	*Scutellaria serrata*	None	W1
Sweet Fern	*Comptonia peregrina*	None	W1
Tawny Cottongrass	*Eriophorum virginicum*	None	W1
Thick-pod Wild White Indigo	*Baptisia alba*	None	W1
Water Spider Orchid	*Habenaria repens*	None	W1
Butternut	*Juglans cinera*	FSC	W5A
Carolina Hemlock	*Tsuga caroliniana*	None	W5A
Eastern Hemlock	*Tsuga canadensis*	None	W5A
Ginseng	*Panax quinquefolius*	None	W5B, SC
Large Yellow Lady's-slipper	*Cypropedium parviflorum*	None	W5B
Blue Monkshood	*Aconitum uncinatum*	None	W6
Catawba Rhododendron	*Rhododendron catawbiense*	None	W6
Eastern White Pine	*Pinus strobus*	None	W6
Laurel-leaf Greenbriar	*Smilax laurifolia*	None	W6
Lettuce-leaf Saxifrage	*Micranthes micranthidifoloia*	None	W6
Mountain Spleenwort	*Asplenium montanum*	None	W6
Roundleaf Sundew	*Drosera rotundifolia*	None	W6
Sand-myrtle	*Leiophyllum buxifolium*	None	W6
Silverling	*Paronychia argyrocoma*	None	W6
Smooth White Violet	*Viola blanda*	None	W6
Tall Bellflower	*Campanulastrum americanum*	None	W6
Twisted Sedge	*Carex torta*	None	W6
Umbrella Magnolia	*Magnolia tripetala*	None	W6
Virginia Bartonia	*Bartonia virginica*	None	W6
Wood Anemone	*Anemone quinquefolia*	None	W6
Zigzag Bladderwort	*Utricularia subulata*	None	W6

American Trout-lily	*Erythronium americanum*	None	W7
Carey Saxifrage	*Micranthes careyana*	None	W7
Closed Gentian	*Gentiana clausa*	None	W7
Heartleaf Scullcap	*Scutellaria ovate ssp. ovate*	None	W7
Heath Woodrush	*Luzula multiflora*	None	W7
Long's Rush	*Juncus longii*	None	W7
Mountain Rush	*Juncus brevicaudatus*	None	W7
Prairie Wedgescale	*Sphenopholis intermedia*	None	W7

Status Code Definitions:

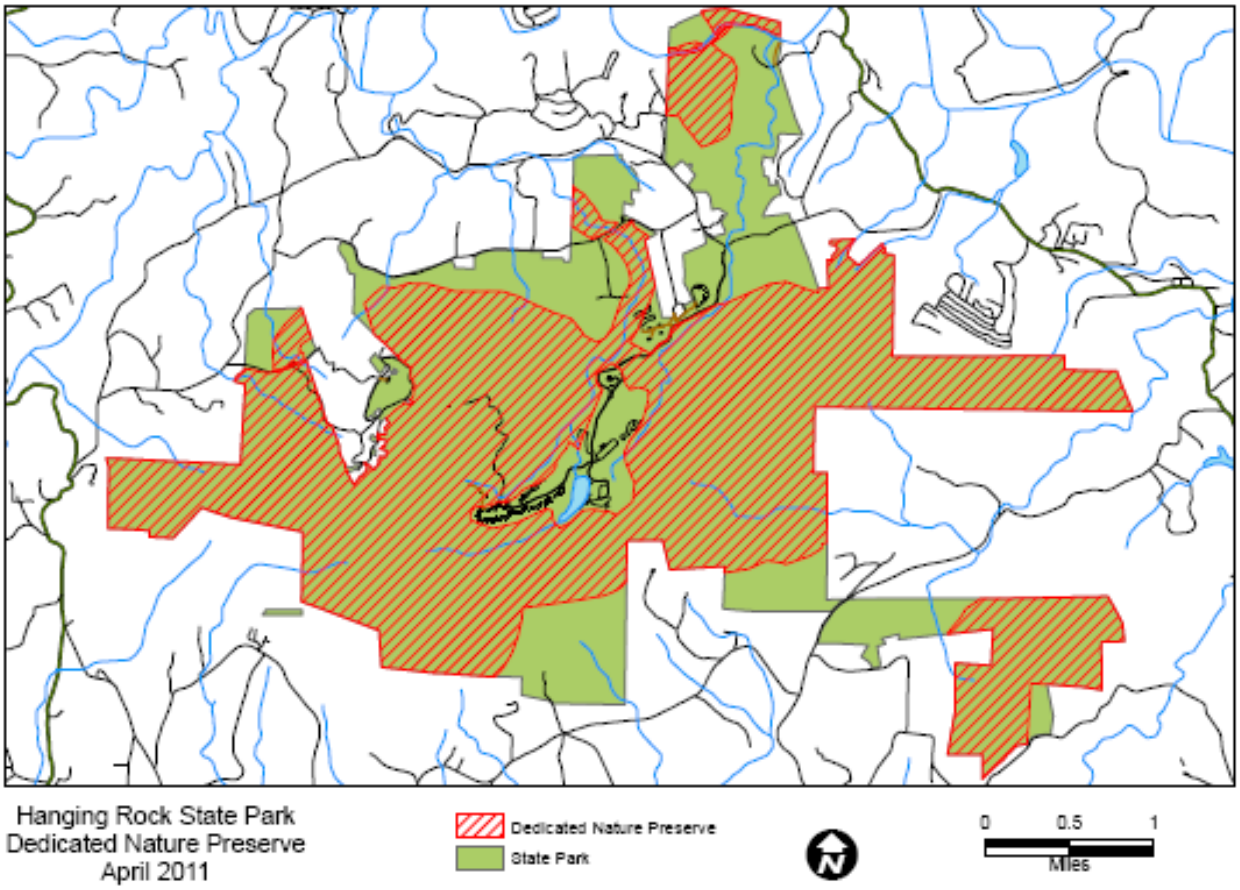
E = Endangered. Any taxon "which is in danger of extinction throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
T = Threatened. Any taxon "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
FSC = Federal Species of Concern. A species under consideration for listing but for which further data are needed to resolve its conservation status.
SC = Special Concern. Any NC animal species that requires monitoring but that may also be collected and sold.
SR = Significantly Rare. For animals, it applies to those species not listed by the WRC as Threatened, Endangered, or Special Concern but that have been deemed rare enough to warrant monitoring. For plants, it applies to species not listed by the PCP as Endangered, Threatened, or Candidate. These species generally have fewer than 100 populations statewide and have been substantially reduced in numbers due to habitat loss.
SR-D = Significantly Rare and **disjunct** from its main range.
SR-L = Significantly Rare, with its range **limited** to NC and adjacent states. These species have 25-50 populations in NC, but <100 rangewide.
SR-O = Significantly Rare, and its range is sporadic or cannot be described by the **other** SR categories.
SR-P = Significantly Rare and at the **periphery** of its range in NC. Generally more common elsewhere.
SR-T = Significantly Rare **throughout** its range, with fewer than 100 populations statewide.
W = NC Watch List. These range from W1 – W7 for plant species and from W1 – W5 for animal species. Distribution, threats, and degree of rarity may not be fully known, but this designation is extended to any species believed to be rare and of conservation concern but not warranting active monitoring at this time. Species with more than one Watch list ranking are considered vulnerable to multiple threats. See the NHP's lists of the rare animal and plant species of North Carolina for more information on specific watch list definitions.

DEDICATED NATURE PRESERVE

The DNP boundary at Hanging Rock includes the most significant biological features of the park, including the rare plant and animal locations, rare and/or high quality natural communities, and the most mature portions of the most extensive forest communities. Some areas of younger forest in the Dan River bluffs are included because they provide rare species habitat. Forests along upper Cascade Creek and Indian Creek are included to protect the aquatic communities.

Excluded from the dedication are areas around the developed park facilities, proposed access for Moore's Wall, younger forests and successional pine forests where they play no special role for rare species, and other more heavily disturbed or altered areas. Some areas that have been excluded because their condition is not well-known may warrant dedication in the future.

The DNP is managed for public recreation and natural resource protection and is heavily visited; most of the use within the dedicated area is hiking and rock climbing. Trampling of rock outcrop communities and disturbance of rare animals is a primary concern for management. Natural resource management priorities within the DNP include rock climbing management, trail management, the development of a fire management plan, and the control of non-native species.



CHAPTER 3

PARK PLANS

LAND PROTECTION PLAN
HANGING ROCK STATE PARK
2012

Hanging Rock State Park contains 7,049 acres as of July 1, 2012. This land protects the nationally significant resources of the eastern end of the Sauratown Mountains range and provides a land base for public recreation facilities and activities such as picnicking, camping and hiking.

Land acquisition objectives for Hanging Rock State Park are: the protection of the primary resource of the park, protection of water quality in the streams in the park, protection or views of and from the park, land for recreation facilities including the Mountains-to-Sea State Trail and local trail connections, and land for manageable boundaries.

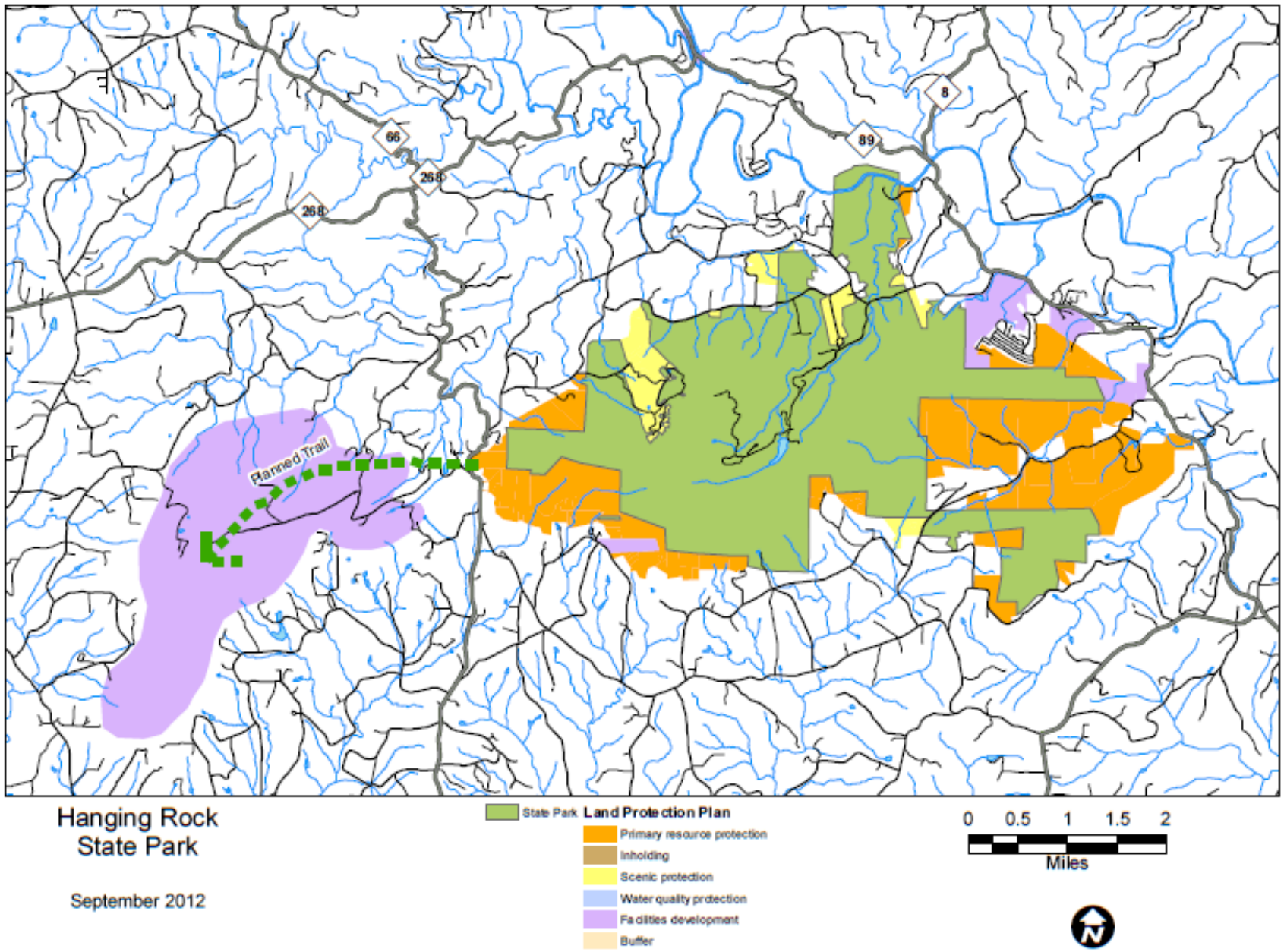
Protection Plan Additions

- 3,320 acres to completely protect the slopes, both natural and scenic resources, of the park's mountains. These are shown as rust and yellow on the map around the existing state park property.
- 20 acres for public access site on the Dan River. This is at the intersection of NC 89 and NC 268 along the Dan River.
- 420 acres for trail heads and connections to trails including the Mountains-to-Sea State Trail and local trails. These tracts are in purple on the map.
- 3,380 for the protection of the natural and scenic resources of Sauratown Mountain. This area is to the west of the existing park and is shown as rust on the map.

Planned Land Protection Needs

Description	Acreage
January 1, 2011 size of Hanging Rock State Park	7,049
Planned needs	7,140
Revised planned size	14,189

Acquisition of additional park land is dependent on reaching an agreement with willing sellers.


66
268
268
89
8
Planned Trail
Hanging Rock
State Park
September 2012
State Park
Land Protection Plan
Primary resource protection
Inholding
Scenic protection
Water quality protection
Facilities development
Buffer
0 0.5 1 1.5 2
Miles
N

PARK DEVELOPMENT PLAN
HANGING ROCK STATE PARK
2012

Rank	Project Title	Score*	Cost
1	Lake Improvements (Dam Study) Life/Safety	737	$22,660
2	New RV Campground	655	$3,092,680
3	Family Campground Improvements	639	$932,685
4	Picnic Area Improvements	635	$883,799
5	Group Campground Improvements	573	$301,253
6	Flat Shoals Mountain Trails	527	$229,969
7	Lake Improvements (Recreational)	506	$217,773
8	Vault Toilets at Tory's Den & Lower Cascades	495	$187,124
TOTAL			**$5,867,946**

** The score comes from the division's Project Evaluation Program (PEP). The PEP uses an evaluation formula to rank projects that considers four factors: the objective of the project; the justification or urgency for funding; the estimated annual number of persons (visitors and/or employees) who are affected by the project; and the project's significance, ranging from local to national. The park superintendent, district superintendent, a representative from the natural resource program, and a representative from the engineering/construction program evaluate projects. Fifteen objectives are used to categorize a project's purpose, and each project can have a primary and secondary objective.*

*** Estimated project cost does not include contingencies, design fee, nor escalation.*

1. Lake Improvements (Dam Study) Life/Safety

Detailed engineering study of the lake/dam is needed to identify any deficiencies. N.C. DENR Dam Safety identified seepage on the downstream embankment.

2. New RV Campground

This project will construct a new campground loop with full hook-up sites (water and electrical) and shower house. Two potential locations are considered. The preferred site (on CC Campground Rd.) is land dependent. Acquisition of additional park land is dependent on reaching an agreement with willing sellers.

3. Family Campground Improvements

Project will construct new shower house and laundry facility, amphitheater, and entrance station; restore the existing 73 camp sites, and demolish the existing shower house. Depending on site location of the amphitheater and shower house, a vault toilet may be required to meet ADA requirements.

4. Picnic Area Improvements

This project makes day use improvements to several areas at the park. The historic bathhouse will receive concrete floor repairs. At the picnic area, existing secondary electrical runs will be placed underground, a new 12-table picnic shelter with an attached toilet will be constructed, the existing picnic area will be redesigned to better fit the topography and mitigate erosion, several CCC-era building foundations will be renovated

for picnicking sites. At the visitor center, a new 4-table picnic shelter near parking lot will be constructed for ADA accessibility.

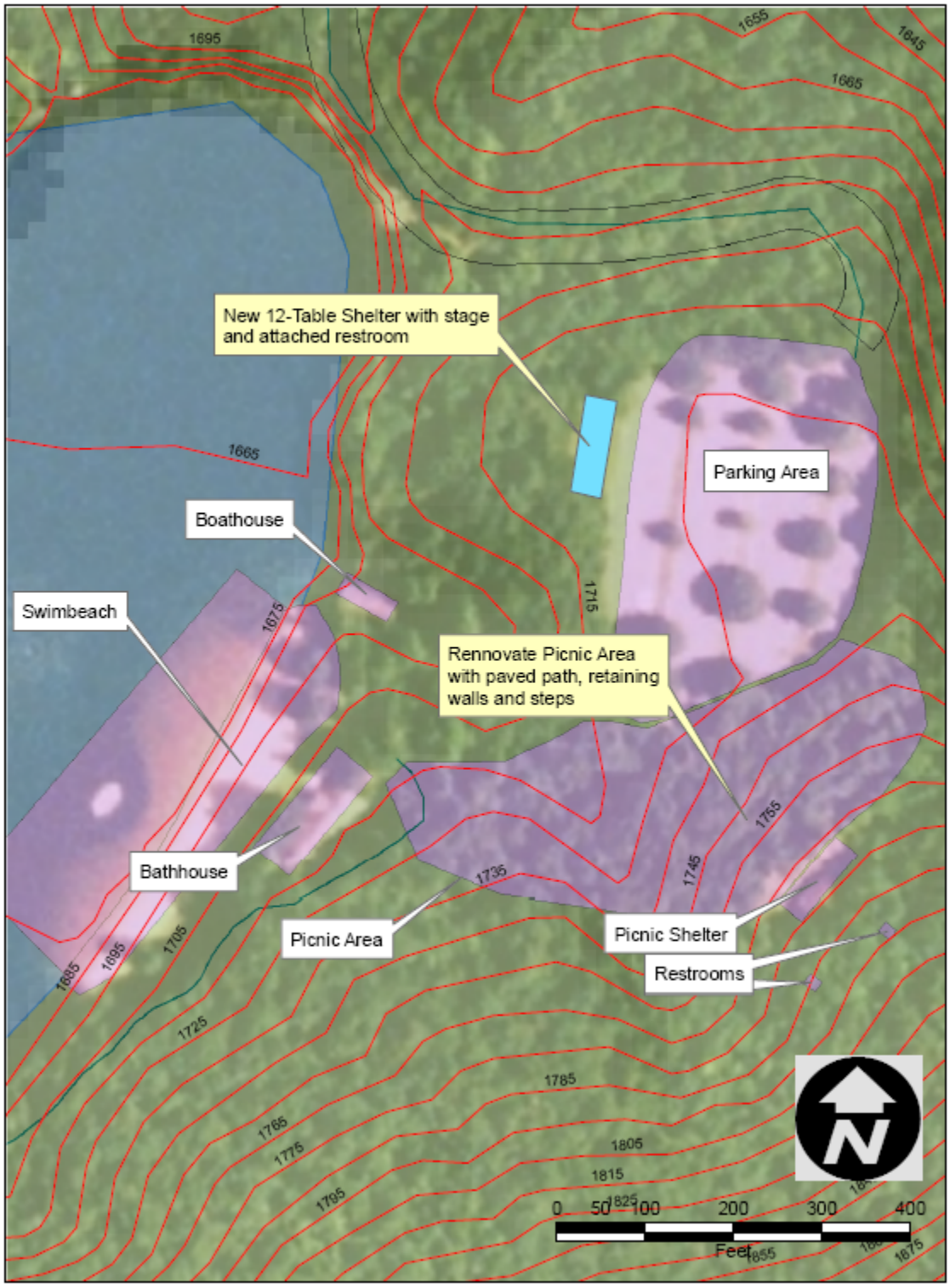
5. Group Campground Improvements
Project includes improvements to five group camp sites and installation of a two-sided vault toilet. One group camp will be made ADA accessible.

6. Flat Shoals Mountain Trails
Approximately six miles of 18 inch -24 inch natural tread trails for Flat Shoals Mountain Trail will be developed. Estimate does not account for any structures along the planned route if required.

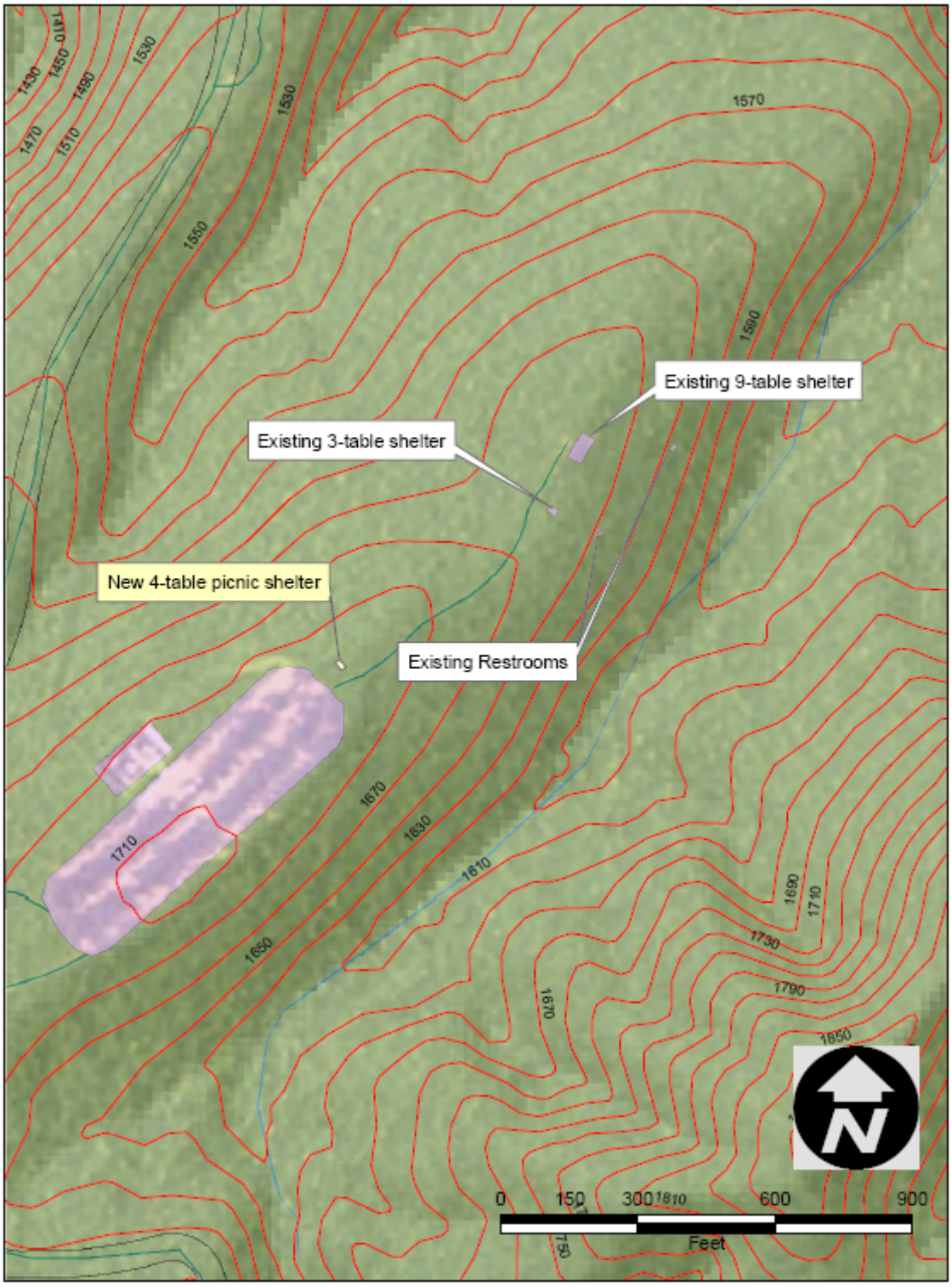
7. Lake Improvements (Recreational)
Improvements to the swim beach area to include grading, ADA access to boathouse, and swim platform repairs.

8. Vault Toilets at Tory's Den & Lower Cascades
Install vault toilets at Tory's Den and Lower Cascades day use areas.

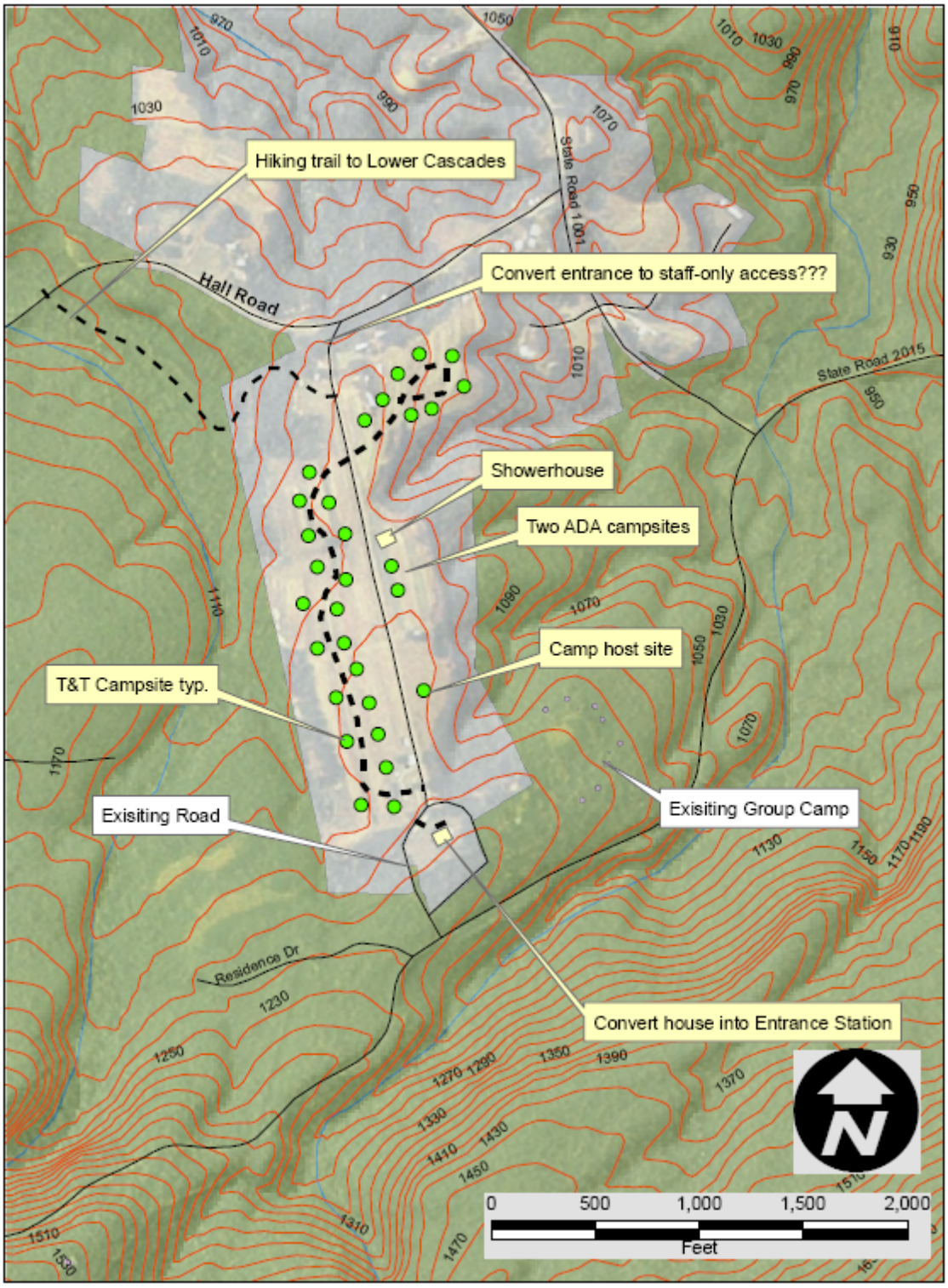
Picnic Area Improvements



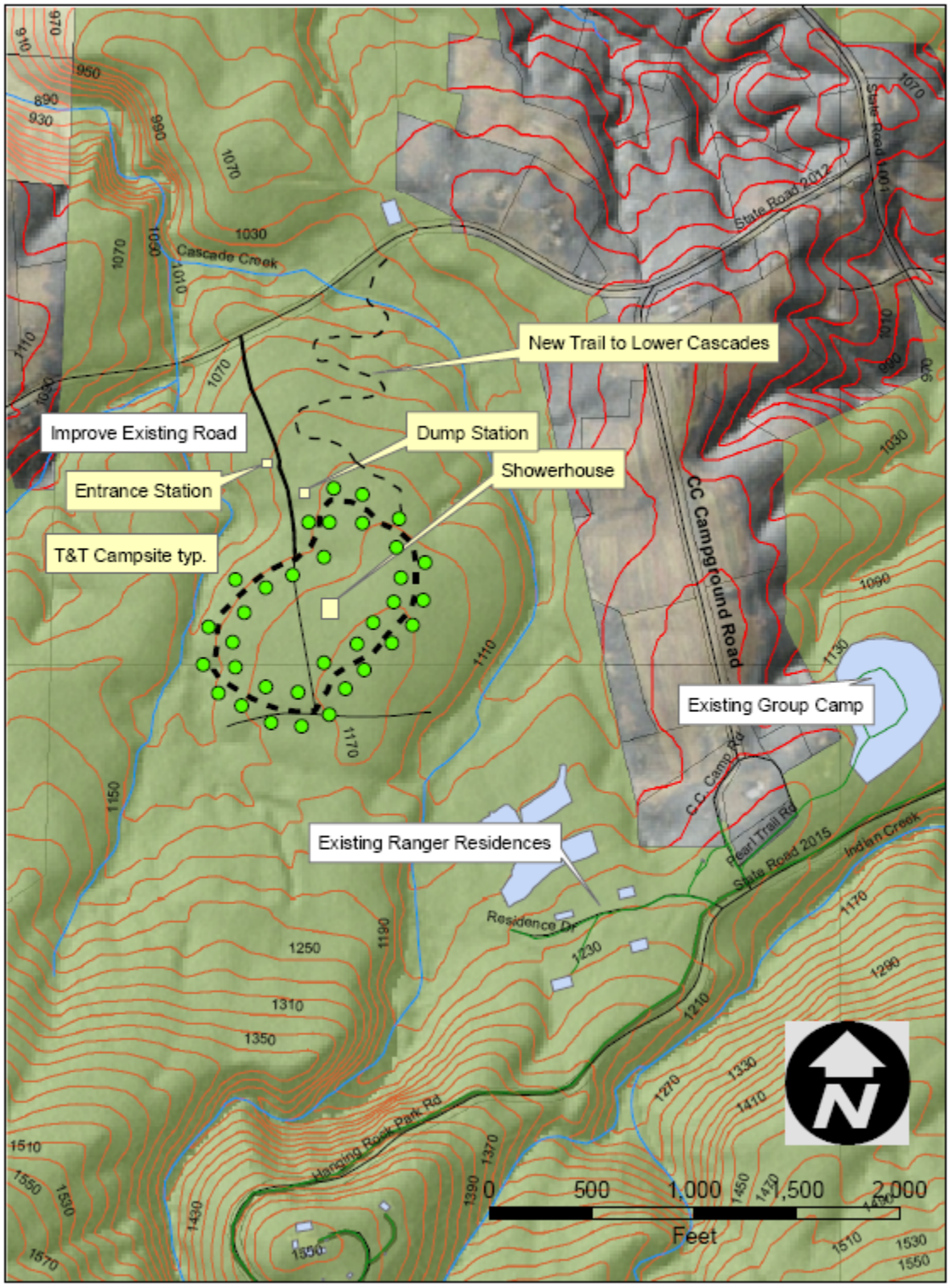
Picnic Area Improvements (at Visitor Center)



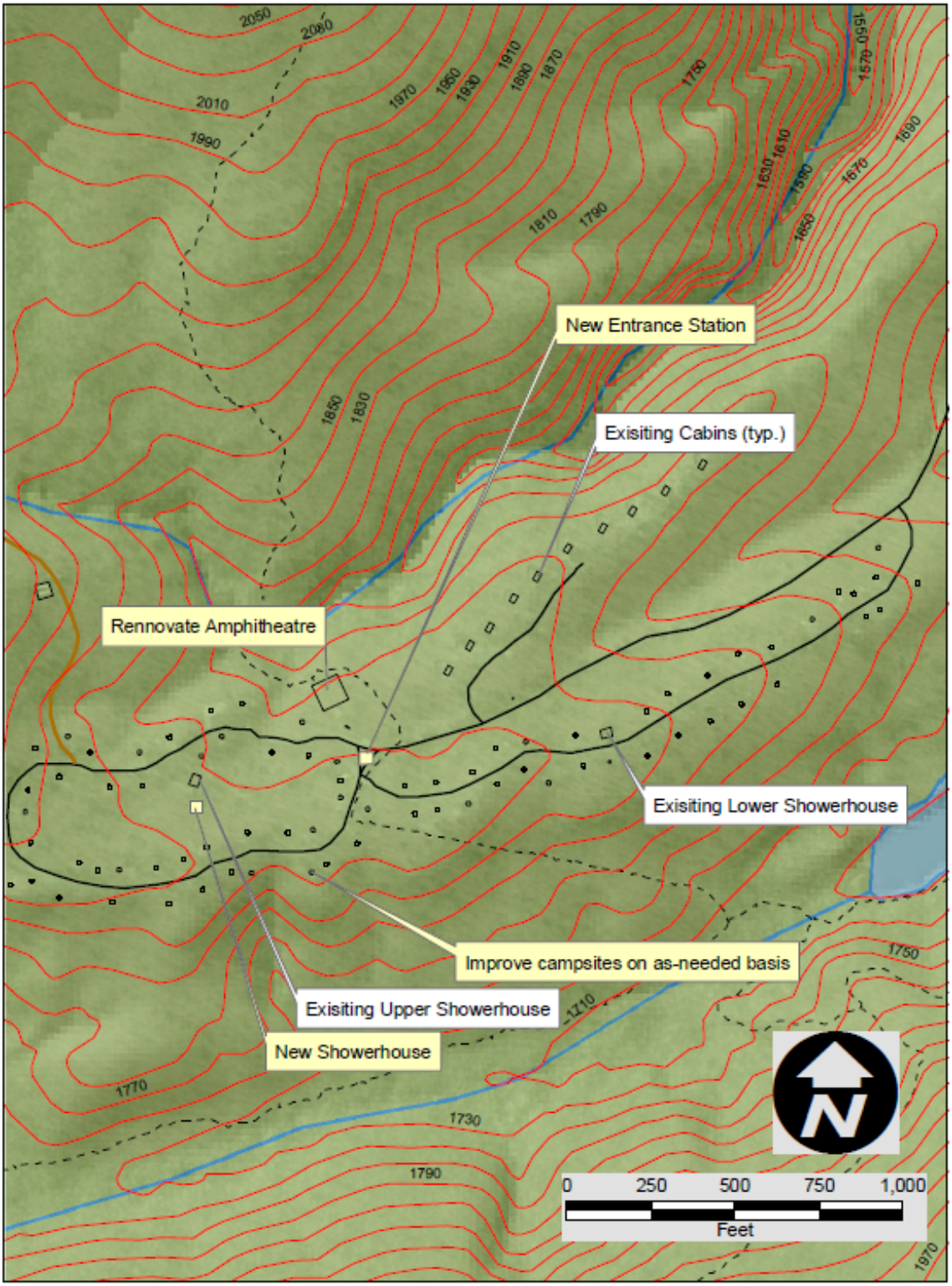
Proposed Tent and Trailer Campground – Preferred option – Land Dependent



Proposed Tent and Trailer Campground – secondary option



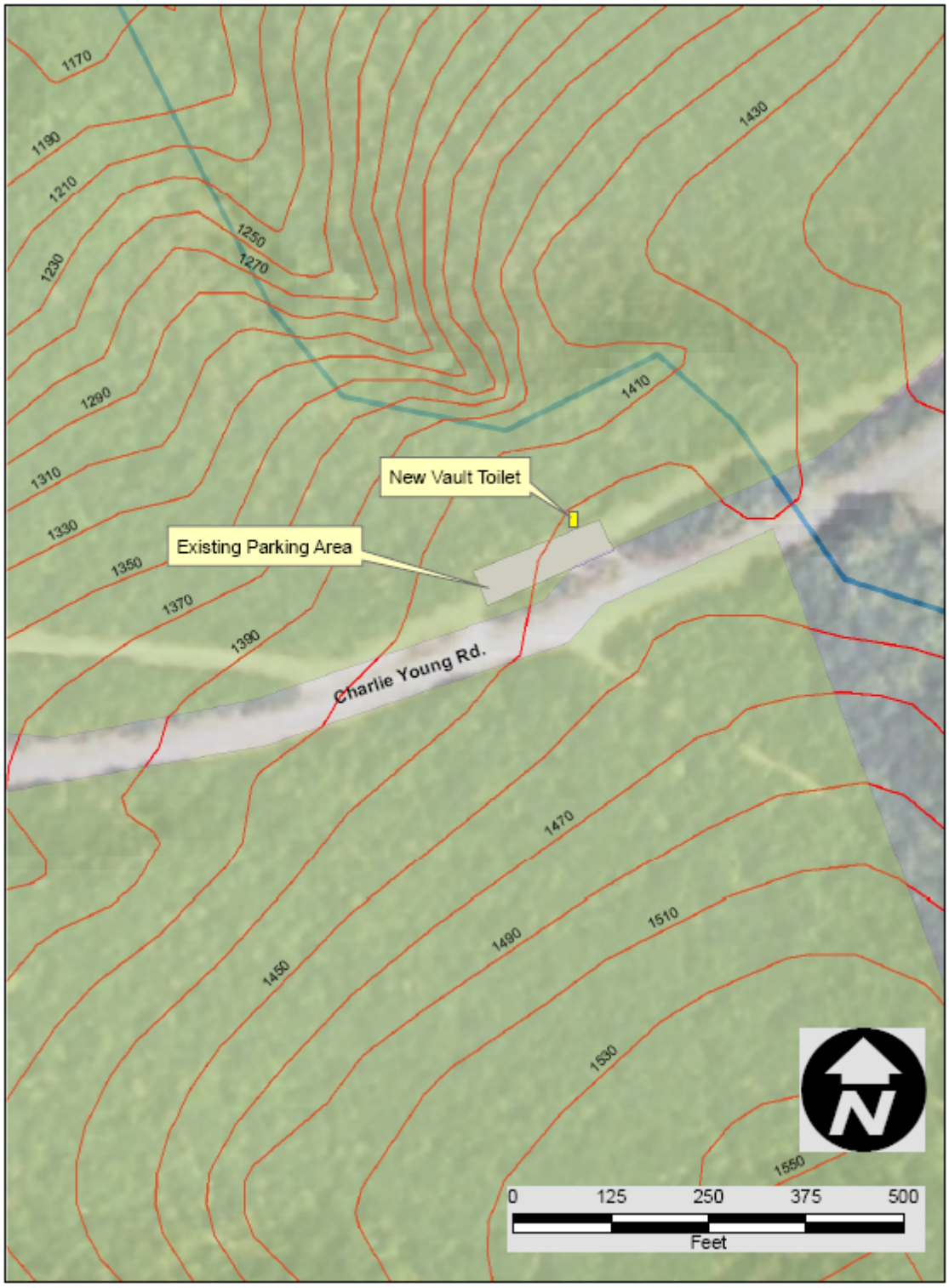
Family Campground Improvements



Group Campground Improvements

Proposed Vault Toilet at Lower Cascades

Proposed Vault Toilet at Tory's Den



HANGING ROCK STATE PARK
TRAILS PLAN
2012

1. **HARO Dan River Access – Hiking/ADA Accessible Trail** - 1 mile in length – with potential for surfacing approximately ½ mile of this loop as an ADA accessible trail.

2. **Flat Shoals Mountain Trail** – Hiking - 6+ miles in length – 18 - 24 inch natural surface trail

New Trails Pending Acquisition of Property

1. **NC 268 - NC 89 Dan River Paddle Access**

2. **Hanging Rock to Danbury Connector Trail** – 3 miles in length – 18-24 inch natural surface trail – Three Options

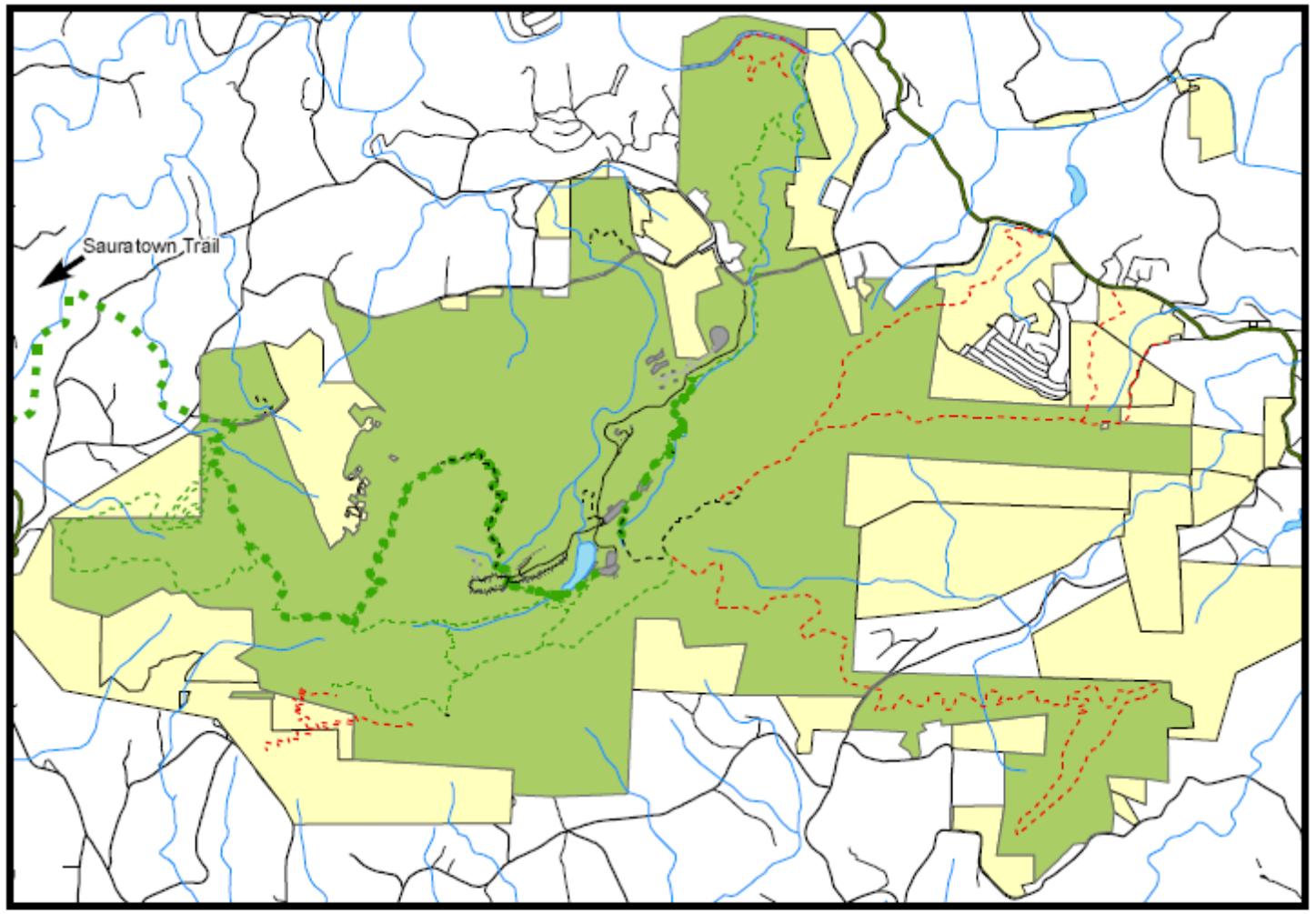
   A. Connection to the proposed Stokes County Governmental Complex to Danbury Greenway – 2 options
   B. Connection to Sheep Rock Road in the Town of Danbury

3. **Cooks Wall Access Trail –** 2 miles in length – 18-24 inch natural surface trail

Five Year Plan

The Division of Parks and Recreation should strive within the next five years to:

- Coordinate with internal programs to evaluate the potential to construct a sustainable ADA accessible trail at the HARO Dan River Access property
- Coordinate with internal programs to solidify plans for a trail connection to the town of Danbury and to the Stokes County/Danbury Greenway
- Coordinate with internal programs to support the Sauratown Trails Association and its efforts to manage and maintain the Sauratown Trail
- Coordinate with internal programs and local climbing organizations to solidify plans for the Cook's Wall Access Trail
- Review progress on trail goals and revisit the potential for regional connections which showcase state parks' positive impact on the surrounding communities



Hanging Rock State Park
Trails Plan

December 2010 GMP

Existing Trail, Good Condition
Existing Trail, Fair Condition
Planned Trail
Mountains to Sea Trail
Future Need
State Parks Unit

0 0.5 1
Miles

INTERPRETATION AND ENVIRONMENTAL EDUCATION PLAN
HANGING ROCK STATE PARK
2012

The 1987 State Park System Act defines the purpose of the state parks system. It establishes that:

> *The State of North Carolina offers unique archaeological, geologic, biologic, scenic and recreational resources. These resources are part of the heritage of the people of this State. The heritage of a people should be preserved and managed by those people for their use and for the use of their visitors.*

It further provides that:

> *Park lands are to be used by the people of the State and their visitors in order to promote understanding of and pride in the natural heritage of this State.*

Park interpretation and environmental education are primary ways in which the Division of Parks and Recreation achieves this purpose. Hanging Rock State Park is well suited to interpretation and environmental education, with its excellent representation of geology and habitat types found in the Sauratown Mountains.

Hanging Rock State Park has two primary interpretive themes and nine secondary themes divided into three categories. One primary theme is the interpretation of the park's geology and formation of the Sauratown Mountains. The second is an examination of the many communities found within the park.

PRIMARY INTERPRETIVE THEMES

Geology of Hanging Rock

The geologic formation known as Hanging Rock is located at the eastern end of the Sauratown Mountain Range. The peaks, knobs and ledges of Hanging Rock display a great example of a geologic formation known as a *monadnock*. Here the quartzite rock has resisted erosion to rise abruptly from the surrounding land. Interpretive and educational activities emphasizes the theories explaining land forms and the formation of the park's geologic features.

Natural Communities

This theme examines the diversity of the park's natural communities. The Sauratown Mountains are an isolated range from the Blue Ridge; they rise up to 2,579 feet from the surrounding Piedmont plateau of approximately 800 feet. In this unique setting, plant communities typical of the North Carolina Mountains and Piedmont regions mix. The park is particularly notable for its rock outcrop communities, which occur on exposed ridges and as spray cliffs in sheltered stream gorges. The park also supports the state's easternmost examples of Carolina Hemlock Bluffs.

II. Secondary Interpretive Themes

Secondary interpretive themes have been identified to complement the primary interpretive themes. They are:

History

- Archaeological resources pertaining to Native Americans and in particular the Saura Indian tribe.
- Civilian Conservation Corps and the construction of the initial park facilities during the Great Depression.
- Revolutionary War. The Tory's Den area of the park was locally prominent due to militia skirmishes during the American Revolution.

Ecology

- Rare species. Hanging Rock State Park plays a vital role in providing much needed habitat for their survival. More than 75 state or federally-listed rare species occur in the park.
- Animal species. The park offers visitors the opportunity to see wildlife firsthand. These experiences promote an understanding of the animals that make our parks *naturally wonderful*.
- Exotic Invasive Species. This theme seeks to identify Exotic Invasive Species, discuss measures to control them and explain their affect on the park's native species.
- Fire Ecology and the benefits of prescribed fire in the park.

Water Resources

- Water Quality. Indian Creek remains within the park from beginning to end; and the lake has no agricultural or industrial runoff making both of these high water quality areas.
- Recreation. This theme explores ways to balance water quality and recreation regarding the lake and the Dan River.

ORGANIZED I&E PROGRAMS

- Park interpretive programs and nature hikes are well attended by the general public. Programs are offered by both park rangers and volunteers. This should continue and be expanded to offer a variety of topics.
- One of the major ways to reach young people from all demographics in the community is to work with the public school system. A major goal is always to get school students out to the park on field trips. The annual Environmental Awareness Days brings every 5th grade student in Stokes County out to the park with anywhere from six to seven stations set up in rotation.
- Park rangers should continue to do requested programs at the park for school groups. The major request is for our primary theme of geology.

DELIVERY STRATEGIES FOR I&E PROGRAMS

- Program advertisement occurs in local newspapers, on the park's website, and on the Stokes County website.
- Staff will continue working with the local arts council to advertise programs associated with the arts in the park.
- Staff will partner with Friends of the Sauratown Mountains as an outlet for delivering interpretive programming.

EXHIBIT HALL AND WAYSIDE EXHIBITS

- The visitor center should continue to be an interpretive tool the moment the visitor walks through the door, from the front desk help to trail maps to lobby exhibits to audiovisual programs to the actual exhibit hall itself.
- Every few years, the exhibit hall and lobby exhibits should be updated so returning visitors can have a new experience. This will encourage revisits.
- Additional updated auto slide programs should also be made for those visitors who want to experience the park but are physically unable to hike to scenic areas.
- Wayside exhibits, both interpretive and informational, represent one of the most effective ways to get information to visitors. Well-planned wayside exhibits share unique stories, answer questions, inspire thought, connect visitors to the park's interpretive themes and maintain some visual consistency throughout the park.

EXHIBITS AND SIGNAGE PLAN
HANGING ROCK STATE PARK
2012

VISITOR CENTER EXHIBITS

The initial installation of the visitor center exhibits in the 1990s was anticipated to have a 10-15 year lifespan. On a regular basis, park staff may update the exhibits to meet evolving visitor needs and to address maintenance issues as they occur. Exhibits should be inspected annually. A standardized inspection form is available online at the exhibit program website and on the FIND database. Updates or replacements should made as soon as possible to exhibits that will impact the visitor experience: ones that are broken, non-working or have outdated content.

Light levels in the exhibit hall should be tested to ensure they meet minimum ADA standards. The track lights need to be replaced with a more modern, energy efficient system. It is recommended they be replaced as soon as possible with an LED system that will better preserve graphics colors and artifact lifespans. LEDs have the added benefit of energy savings and reduced maintenance. Replacing lighting should be a priority to extend lifespan of both current and replacement exhibits.

Estimated cost of renovations to restore faded murals, update graphics and repair non-working video interactives:	($8,000)
Estimated cost to replace lighting:	($3,600)

As the park explores additional marketing avenues, care is being taken to integrate retail displays into the visitor center spaces without marring the original "look and feel" of the building.

PARKWIDE INTERPRETIVE DISPLAYS

Park staff continue to extend the visitor center interpretation to other areas in the park via well-sited, themed interpretive wayside displays. The most recent statewide sign guidelines and graphics style guides are used.

Most interpretive displays in the park are located in upright kiosks. As costs allow, existing panels will be transferred to HPL panels in low profile frames, maximum size 18x30 inches. New panels will also follow this format. This provides a clear visual distinction for visitors between information locations and interpretive sites.

PARKWIDE WAYFINDING SYSTEM

Park staff will work with the district staff, Exhibit Program staff and other division staff to meet the following proposed goals. As new trails and facilities are developed, wayfinding signage will be addressed as part of the design of those facilities. (eg., Indian Creek river access area) Note that a wayfinding system continues to evolve as visitor needs change; this system too should be reviewed on an annual basis to ensure that it is meeting visitor needs. The park map and website

should be included in this review.

1. Ensure all arrival points and decision points of the wayfinding system are clearly marked and appropriate information is provided.

    - Existing DOT signage functions well to direct visitors to main park gate. Park staff will work with DOT to improve signage that directs visitors from main park gate to other access areas. Park staff should work with N.C. DOT to improve signage from the North directing people from Virginia along N.C. Highway 8.
    - The name of the visitor center on the outside of the building provides reassurance to visitors they have arrived and assists their cognitive transition to the park experience.
    - Combine information from different signs to reduce the number of signs at arrival points, particularly at the main intersection in the park and at the campground entrance. Fewer signs allow visitors to gather information quickly and simply. The sign-heavy campground entrance was of particular concern during the survey period.
    - Ensure all arrival points and decision points on the hiking trail system are clearly marked, and provide appropriate navigation information.
    - Combine information on signs as accurately as possible to prevent confusion. Eg., Accessible Upper Cascades waterfall trail signs could be seen as misleading as the accessible trail doesn't provide an alternate "waterfall" experience but it follows the waterfall trail for some distance. Orientation sign at trail junction could be redesigned to clearly separate the information.
    - Combine information on signs as clearly as possible to increase legibility. Simple, consistent designs help visitors build visual hierarchies so information can be quickly absorbed. (eg., all arrows on left side of signs.)

2. Keep the visitor experience simple, relaxed and refreshing by eliminating unnecessary signage. Too many signs or carelessly placed signs create visual clutter and may actually have the opposite effect than intended – visitors may stop reading signs altogether. This can create a dangerous situation if visitors do not pay attention to signs with important safety messages. It also ultimately hurts the park's ability to reach visitors with stewardship and interpretive messages.

    - Simplify trailheads. Trailheads transition visitors from developed areas (parking lots) to natural areas. Supply needed information in a manner that is consistent with the purpose of the trailhead.
    - As much as possible, remove and/or replace signs that are redundant, are no longer serving a purpose, or no longer fit in with the sign style of the park.

3. Encourage visitors to respect and care for the natural resources by setting an example: (continue to) keep current signage neat and well kept.

- Wooden signs across the park are well kept, inspected annually, and repainted as needed. There is very little vandalism. A handful of older DOT road signs should be cleaned.
- Long term, signs will eventually be made from recycled plastic material, but the various hand carved, hand painted wood around the park are currently done with a very nice, consistent style and lettering that is easy to recognize for wayfinding purposes.
- A handful of very old outdated park boundary signs scattered around the park should be removed or replaced.

The Natural Resources Program has developed a park-specific database to identify and prioritize resource management issues for the park. Those issues that are considered to have a medium or high priority are listed in the table below. High priority issues are those for which significant adverse effects could occur if not addressed within 3-5 years.

Category	Subcategory	Issue	Priority
Animal Resources Management	Inventory Deficiency	1. Comprehensive faunal surveys.	Medium
	Rare Species Management	1. Confirm NHP rare species records and status. 2. Develop rare species monitoring plans.	Medium
	Invasive Species Management	1. Hemlock woolly adelgid management. 2. Gypsy moth monitoring.	Medium
Botanical Resources Management	Inventory Deficiency	1. Comprehensive botanical surveys. 2. Natural community mapping.	Medium
	Rare Species Management	1. Confirm NHP rare species records and survey for new species. 2. Rare species monitoring plans.	Medium
	Exotic Species Management	1. Update inventory, prioritize species. 2. Develop control plans. 3. Herbicide training/licensing.	High
Land Use Management	Fire Management	1. Revise fire management plan. 2. Get DPR-approved burn boss on staff.	High
	Resource Management Plan	Develop a comprehensive, park-specific natural resource management plan.	Medium
	Climbing Management	1. Monitor Impacts. 2. Monitor/repair fixed anchors.	Medium
	Water Quality Protection	Monitor stream quality, especially below park lake.	Medium
Cultural Resources Management	Archaeological Resources	Protection/preservation of CCC-era structures.	Medium
Infrastructure Management	Regulatory Compliance	Insure proper review and compliance for all capital improvement projects.	Medium

ANIMAL RESOURCES MANAGEMENT

Inventory Deficiency Although the park has over 250 NRID entries for animal species, many of these are dated or are poorly documented. The park needs an updated, comprehensive survey.

Rare Species Management Most of the park's rare animal species records are dated, and a comprehensive survey is needed to assess the presence and status of the rare species that are tracked by the NHP. Park staff conducts annual inventories for several species, including peregrine falcons, Wehrle's salamanders, box turtles, and timber rattlesnakes.

Exotic Species Management Carolina and eastern hemlocks are an unusual and important component of the park's forest communities, particularly in the rare hemlock bluff communities and the stream corridors, where they are a major component of the riparian community. As noted above, the park's hemlocks are affected by the non-native Hemlock Woolly Adelgid *which is now widespread in hemlock stands throughout western North Carolina. Left untreated, these infestations will kill the park's hemlocks.*

The funding for chemicals and other control equipment through DFR appears to be reliable. The NRP recommends that park staff continue to monitor and treat hemlocks throughout the park. Treatment data are being managed by DFR staff as part of their statewide database. Treatments can be expected to be effective for 1-3 years, depending on the size and condition of the tree at first treatment.

The park is also monitoring for the Gypsy Moth (*Lymantria dispar*), which is a serious threat to some of North America's most beautiful and popular deciduous trees including maples, oaks and elms. This species has the potential to damage large areas of the park, and the NRP recommends that park staff continue to monitor for this species throughout the park.

BOTANICAL RESOURCES MANAGEMENT

Inventory Deficiency There are currently nearly 700 plant species documented for the park. Given the mountain affinities ascribed by the NHP to several of the park's natural community types, it is likely that the park's species list could be significantly expanded by a comprehensive and updated floristic inventory. There are also gaps in the database for mosses, bryophytes, and other species groups. The park would also benefit greatly by having its natural community types mapped. The NHP GIS database has localized records of the various community types, but establishing their location and extent could play an important role in fire management, rare species management, and park planning.

Rare Species As with the zoological records, many botanical records are dated, and a comprehensive survey is needed to assess the presence and status of the park's rare species. It is difficult to reconcile the NHP and NRID rare species records, and the inconsistencies need to be resolved. The park also needs species-specific monitoring plans for rare species, especially those with high ranking state or federal status, such as bear oak and bent avens. The park's Schweinitz's sunflower population is managed cooperatively with biologists from the N.C. Department of Transportation. Fire prescriptions are in place to assisting in managing sunflower populations which have responded well.

Exotic Species Management The park was surveyed for invasive species as part of the division-wide inventory conducted in 1999. This survey, while helpful as a basic inventory, was

not comprehensive and did not include objective information or mapping regarding the size of affected areas, recommended treatments, cost estimates, etc. The species identified included lespedeza (*Lespedeza cuneata*), Japanese grass (*Microstegium vimenium*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), tree-of-heaven (*Ailanthus altissima*), mimosa (*Albizia julibrissin*), and multiflora rose (*Rosa multiflora*).

Additional property has been acquired since the 1999 survey, and additional occurrences of these species as well as new species, including kudzu (*Pueraria lobata*), have been documented. Other species are assumed to occur, and the park needs an updated species assessment and prioritization, including GIS/GPS mapping of each species, their locations, and patch sizes.

Additional species-specific control plans need to be developed, and appropriate training, herbicides and equipment are needed. Maintaining a state-licensed herbicide applicator on park staff will be very helpful, and it is recommended that a general priority be placed on woody invasive species known to occur in high quality natural communities or near rare species.

LAND USE MANAGEMENT

Fire Management Although the park's fire history is not known with certainty, it is clear from the natural communities that most of the park would have burned periodically under natural conditions. The park supports a wide variety of fire-adapted species and natural community types, and evidence of historical fires is abundant across the park, particularly in the ridgetop and fire-prone Pine-Oak Heath communities. Park staff have developed a fire management plan, and several small prescribed fires have been ignited in the bear oak populations along the ridge atop Moore's Wall.

Expanding the park's fire management program across the range of elevations and natural community types is needed. Many units of varying size could be established using streams, cliffs, established roads, and trails as control lines, and the application of fire using an adaptive management approach would allow much to be learned at little ecological cost. Particular emphasis should be placed on developing large burn units in the Pine-Oak Heath communities and along the xeric, pine-dominated ridges, all of which show extensive historical evidence of fire. These fires would pay large dividends for a variety of rare and common species and would also likely decrease the potential of wildfires by lowering fuel levels.

Park Resource Management Plan Apart from the division's various resource management guidelines, park specific plans - such as invasive species and fire management - and the GMP, there is no comprehensive park-specific resource management plan. Such a plan should be developed that would address all of the GMP issues in more depth and include additional direction on preventing or correcting threats or damage to significant natural resources.

Rock Climbing Hanging Rock's proximity to the Piedmont Triad makes it a popular site for rock climbers, and climbing is allowed at Moore's Wall and Cook's Wall, with Moore's Wall receiving the great majority of the use. Hanging Rock proper and all other outcrops in the park are closed to climbing. There are well over 100 climbing routes of varying difficulty, and the park's designated climbing areas and climbing routes are described in two guidebooks: *The*

Climbers Guide to North Carolina, 3rd Edition (1995), by Thomas Kelley, and *Selected Climbs in North Carolina* (2002), by Yon Lambert and Harrison Shull.

Park staff revised the park's climbing management plan in 2010, and concerns over climbing activity are directed largely toward potential resource management/protection issues regarding cliff-dwelling species on Moore's Wall, including bear oak, Bradley's spleenwort, Greenland sandwort, and raven nesting sites. It is likely that these - and perhaps other - rare species were more abundant on the park's climbing areas prior to the establishment of Moore's Wall as a popular climbing destination in the 1960s. However, given the current level of impacts, it is equally likely that those species will not reestablish. Accordingly, the NRP does not recommend closing any designated climbing areas beyond the normal sorts of seasonal closures already in place. The park reserves the option to close designated sites as deemed necessary in the event of unanticipated concerns.

The restriction of climbing to designated areas and seasonal closures for resource protection, rare species management, such as peregrine falcon nesting, has long been accepted by local climbers, and the overall impacts to those species appear to be minimal. Climbing is confined largely to well-marked routes, and park staff are diligent about monitoring undesignated areas.

Local climbers have requested increased access to Cook's Wall, and although that area is already open to climbing, the park boundary is not clearly delineated relative to privately-owned sections of the wall. Because climber access requires a long hike from the main park area, climbing pressure at Cook's Wall is low and the cliff ecosystems are largely undisturbed. If the division opts to construct additional climber parking and trail access on the outside of the park, the NRP will survey those cliffs to determine if any areas of particularly high value should be off-limits. The installation and management of permanent anchors and other safety gear in the park's climbing areas is managed through the regional representative for the Carolina Climber's Coalition, and park staff should continue their good work collaborating with the coalition.

Water Quality Protection As noted above, the aquatic communities of Cascade Creek and Indian Creek are notable for their water quality and their dissimilarity to other Piedmont streams. Both of these streams have been designated by the Division of Water Quality as Outstanding Resource Waters, which is the state's highest designation. Currently, the park's lake and streams enjoy excellent water quality, and the NRP recommends that park staff continue to monitor water quality and storm water runoff. Such monitoring can be coordinated with the Division of Water Quality.

CULTURAL RESOURCES MANAGEMENT

Protection/Preservation of Civilian Conservation Corps-era Structures The park supports an extensive assortment of ruined and standing Civilian Conservation Corps (CCC) structures, most notably the bathhouse, which was placed on the National Register of Historic Places in 1991. There is interest among the park staff to conserve and interpret the remains of the structures that were either never completed, such as the lodge above the park lake, and the barracks, which were located in the current group camp area. Conservation of the cultural resources will be done in cooperation with the NRP and the State Historic Preservation Office.

Two CCC era structures relocated from the park after the abandonment of the CCC camp are still in use by park neighbors and are in good repair. Thought should be given to repurchasing and re-establishing these two structures in the park for interpretive purposes should they become available.